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THE ART OF MEDICINE

FREDERIC BRODIE, M.D., F.R.C.S.E.

Vancouver

"Art is long—life is fleeting—experience fallacious and judgment difficult."

OF all the immortal utterances of Hippocrates, the succeeding centuries have proved none to be truer than this. In those remote days, nearly five hundred years before Christ, no experiment had been made, no facts recorded. It was the beginning. The practitioner's armamentarium consisted of a keen eye, a sensitive touch and a logical brain. How readily one can imagine the old clinician of Cos with his comprehensive grasp and broad outlook, mentally visualizing the then almost impenetrable vista of far-reaching possibilities and sadly exclaiming after abundant cogitation, "*ars longa, vita brevis.*" But this realization did not paralyze his initiative and happily for succeeding generations, observations and deductions were made and recorded, and therewith the true science of medicine came into being.

To the theoretic threads of Hippocrates, Galen and Celsus added the supporting strands of anatomical research. It is true that all their additions were not facts, and although many of their errors took centuries to correct, impeding true progress to a very considerable extent, their researches added so much to the vitality of medical science that it survived the dark ages. When we remember that Galen, almost single-handed, surmounted the antipathy of public sentiment to human dissection, we may accord him a position almost equal to that of the Greek Master. Truly, to Hippocrates and Galen, the art of medicine was difficult.

It is to Avicenna and the Arabian School that we owe the preservation of Hippocratic and Galenic teaching through the dark mediæval ages. Afterwards, when medicine took its place in the great Renaissance, the ancient writings were accessible. The sound instinct with which Boerhave, Paracelsus and Ambrose Paré harked back to the ancients, realizing that they had begun in a truly scientific manner, created a debt, which posterity can never repay. Thus began the sound maturity of medicine, from which there has been no turning back.

Foremost in the list of contributors, comes our own Harvey, 1587-1657. After twenty-six years of most exacting and painstaking labour, he made the announcement that the blood of animals circulated through a complex system of vessels. Probably no other event in the evolution of Medicine demonstrated so conclusively the narrowness, bigotry and vindictiveness of the human mind or showed so plainly the unfortunate groove into which bright intellects may fall. No sooner was the discovery made public, than a storm of opposition arose. Medical Europe seethed with the controversy. Letters, theses and pamphlets were written in every centre and spread broadcast. The teaching of the new physiology was forbidden in the medical schools of Paris. Meanwhile Harvey battled against the storm almost single-handed. His patients thought him demented and gradually drifted away until his once lucrative practice ceased to exist. For him, indeed, experience was fallacious.

Presidential Address delivered before the Vancouver Medical Association, October, 1920.

Shortly after Harvey, the illustrous Sydenham, that cool, clear, unprejudiced, keen clinician, illuminated the medical horizon and after him, in the eighteenth century came Hunter and Jenner. These two made numerous contributions to medical science, the former developing the practical phase which Harvey began, and the latter conceiving a great idea which he spent his life in perfecting and bringing to practical value.

Not all the illustrious names in Medical History are those of Anglo-Saxons. Lænnec, of Paris, 1781-1826, was a pathological anatomist of great repute, although he has become known in history for his discovery of auscultation.

Probably no individual contributions to the art of medicine have been greater than those of Lister, the discoverer of the potency of carbolic acid, though not of the drug itself; and his great contemporary, Sir James Simpson, who made practical use of the physiological action of ether and chloroform. This illustrious pair, in launching their theories into the professional ocean, created such waves of controversy that they were almost wrecked in the ensuing turmoil. But the stout ship of truth weathered as it always does the turbulent elements, even the violent blasts of theological fervour and religious dogma, and one can safely say that nothing lent more impetus to professional advancement or ameliorated more human suffering than did the labours of these two men.

Many other names could be mentioned as beacon lights along a tortuous course beset on the one hand with the Scylla of false doctrine and on the other with the Charybdis of unbelief. Rokitansky, Koch, Pasteur, Ehrlich, Horsley and Osler, have all shone with distinct and characteristic brilliance and wielded a decisive influence on the evolution of medicine. They have, bit by bit, built up a sound science and a much respected profession, in which it is our proud privilege to be members. What a glorious heritage. What a sublime responsibility. The efforts of these medical pioneers have considerably altered our present-day standing. There is now no unsympathetic laity and there are no dangerously hostile religious fanatics, while the evolution of the instruments of precision has made theorizing unprofitable and proof almost positive.

As a result, and especially during the past fifty years, the scope of the modern physician has become many-sided. He is no longer only a healer of the sick, but his activities have carried him into such divergent ramifications as public health, social and child welfare, preventive medicine, biological research or the innumerable specialties now in vogue. The cognizance of this multiplicity of effort has been a wonderful stimulation and the physician of to-day is taking more and more, as indeed he should, his rightful place in citizenship, politics and finance. Consequently his daily practice, from which position he must do battle for existence and success, presents four distinct but equally important points of view, vis.: (1) His ambition for the State. (2) His relations to colleagues. (3) His responsibility for the patient. (4) His duty to himself.

1. *Ambition for the State.* I use the word "ambition" after consideration. The true physician is a socialist and loyalty to such a creed must make him ambitious. He is primarily a law-abiding citizen and supporter of regularly constituted authority. He is, moreover, a practical part of the state when by his skill, he diminishes the number of the non-working days of its citizens and proportionally increases the annual return. To do this he must be altruistic to no small degree, and what better evidence could be produced than his attitude toward contagious disease. The state declares that certain pathological conditions, the presence of which is a public menace, must be isolated and the physician automatically assumes a large part of the responsibility for consequent quarantine.

Vaccination against small pox and typhoid have not only been inaugurated by physicians, but have been enthusiastically carried out. Venereal dis ease, phthisis and child welfare are all problems which he has grasped and is prepared to face, in spite of the fact that diminution in disease curtails his own revenue. All this has been done ungrudgingly and joyously, with expectation of no other return than a hazy consciousness of having contributed an atom towards that condition whereby the individual is somewhat better prepared to withstand "the slings and arrows of outrageous fortune". Hence the ambition.

Finally, in the relation between state and physician, comes the question of education. Everyone recognizes the fact that the physical welfare and mental development of the child must be carefully looked after up to a certain point. This is excellent, but it stops too soon. By our present system, all children up to fourteen years of age are given or rather compelled to receive a stereotyped education regardless of heredity, natural inclinations, individuality or temperament—to fit them for useful citizenship. When the school education is completed the boy or girl is left to his

or her own resources, to the mercy of parental judgment or the "fell clutch of circumstance". How can the pupil on entrance to the High School, satisfactorily decide the momentous question of his future or, indeed, why should such responsibility be thrust upon him? Parents are often of little help, for they recognize the responsibility of giving advice and usually maintain a discreet silence. Friends are more garrulous for they are not checked by the same onus, and the advice is based upon an inappropriate personal experience, consequently inapt and usually bad. To cross this rubicon which traveses the career of practically every boy, he should have the assistance of a specially appointed advisory vocational board. Some board acting "in loco parentis", in so far as the avocations are concerned, should exist, the personnel to include a physician, an educationist and an economist, and they would have before them a minute record of the boy's progress through the school. The physician would thoroughly investigate the boy's physical capacity and mental possibilities, while the economist would give advice as regards the demands or opportunities in any prospective occupation. By this arrangement the boy and his parents would have the consolidated advice of experts and be in a better position to decide intelligently upon a suitable calling.

2. *Relation to Colleagues.* Association with one's "confrères" will be either individual or collective, as in societies or associations. For years past, it has been well recognized that the convening of medical men has been of inestimable advantage. The exchange of opinions, the mooting of new ideas and the discussion of various problems, have solved innumerable difficulties; not only that, but meeting one's associates from time to time promotes a good fellowship which Dr. Johnson assures us can only be achieved by a good tavern. The secret of any society's success depends on the activity and the interest of each individual member. Better an organization of a dozen enthusiasts than one of fifty inerts. Broadly speaking, the greatest drawbacks to the modern association is the amount of dead wood it carries and the unjust criticism it receives. There is no greater stimulant to conscientious endeavour than the assured prospect of a full attendance and a sympathetic hearing. It is true that the recent international catastrophe which has overtaken the world has had its effect, even so remotely as on an obscure and distant medical association, but now that that is happily past, the opportunity is presenting itself to make our society a factor in medical life. It may be asked in what way can each individual member contribute anything towards this end. The answer is simple. Let everyone be indefatigable in attendance, take part in discussions after preparation, and by that I mean taking serious thought of the matter in hand, prior to the meeting, in order to present some new ideas; serve on committees, conscientiously assuming responsibility for the work entailed and, last but not least, boost the association and so act as to make it what an ideal organization should be.

In the relationship between the physician and his individual confrères there is nothing more appropriate than the application of the golden rule. The courtesy which he would desire one should be prepared to give and there are few callings in which so much of it may be required. No fault could be found with an honest difference of opinion courteously expressed and if in the right, no professional capital should be made from another's error. Speak well of one's colleagues in spite of petty differences so long as those differences are conscientious, honourable and based on ethics, for the belittling or maligning of an associate is undignified, pernicious and contemptible. Conversely, it is just as grave a breach to shield anyone whose practices are degraded and a disgrace to the profession.

As the evolution of medicine progresses, it is impossible for any one mind in a given time to master all the minutiæ. Consequently there is an ever-increasing tendency to specialism and a diminution in the numbers and skill of the general practitioner. This I think is to be deplored, not that I for a moment deprecate the value of specialists, but if every member of the profession restricted himself exclusively to one particular branch, the community would not be the best served. On the other hand if each practitioner, while engaging in general practice, would make himself proficient in one special department and refer other obscure cases to a suitable colleague, the profession as well as the laity would benefit immensely thereby. This procedure would naturally eventuate in a group system of medicine which by all appearances is not beyond the bounds of possibilities and as Hamlet would say, "A consummation devoutly to be wished."

3. *Responsibility for the Patient.* Of all the standpoints in the physician's career, none is more important than this. The patient comes to his physician in simple faith, trusting health and even

life itself to his hands. Implicitly and unhesitatingly he swallows deadly mixtures, takes hypodermics of the most powerful drugs and submits to be rendered unconscious, to have his very vitals investigated by surgical procedures in which the slightest mis-step might eventuate in death. All this, I say, he does with unquestioning confidence when his greatest asset is at stake. Would he do the same with a moiety of his capital? I think not. When it comes to a monetary investment, the most rigorous investigation is made into the proposition, to the possibilities of success, to the record of the promoters and frequently a guarantee of results is demanded. What a difference with the doctor: How frequently is he, the doctor, approached by a total stranger who will immediately consent to undergo a major operation upon being told of its advisability. Are we to infer from this that the average man values his worldly goods more than his health? No; but we can infer that the physician is trusted more than anyone else on earth. That trust is our birthright, inherited from the conscientious endeavour of generations of honest physicians passed away. What a noble heritage: "Be ours to hold it high" for it is an ancient privilege held only in trust, and bound are we to bequeath it untarnished to our successors.

Nothing inspires so much confidence as an active interest in and a thorough clinical examination of a patient. To accomplish this there should be a persistent endeavour to combat the constantly increasing tendency to resort to mechanical means of diagnosis. It is so easy to rush to the radiologist or the bacteriologist and expect a diagnosis forthwith, but that practice is pernicious. It is putting a responsibility upon them which it is not their duty to assume; it is unfair to a patient, in that abnormalities may be overlooked which can only be elicited by physical examination. It is unjust to one's self, for it establishes a careless habit highly detrimental to technical skill. No one will disclaim the position of the electrocardiograph, the microscope or other instruments as aids to diagnosis. The efficacy of such a procedure is obvious when one remembers that it is primarily the patient which should be treated and not merely the disease from which he suffers. Nor does treatment necessarily stop with the patient. Frequently the remaining members of the family, and often the friends as well, must come in for consideration and the physician in charge must be the dominating figure who will not allow himself to be importuned by the solicitations of relatives or stampeded by the opinions of friends.

Bearing in mind the famous aphorism of Hippocrates that if he can do no good, he should do no harm, the physician should beware of saying too much in a patient's hearing. There are so many people whose minds are poised on the precipice of morbidity that the slightest suggestion hurls them headlong into the abyss. Everyone has had the experience of examining a psychopath and seeing an area of hyperæsthesia extend *pari passu* with the progress of the examination. How often have neurotic adolescents and children been materially damaged by overhearing too much, or misunderstanding what is said to them. The least said to patients is the easiest explained away afterwards and the physician should not be expected to hold clinics with the friends on any case because he undertakes its care. On the other hand, I believe the patient, or in the case of a child, the parents should be entitled to a succinct opinion as to the condition and a briefer statement as to advice. This inspires infinitely more confidence and can the less readily be misconstrued than a garrulous dissertation destined to be impressive.

Furthermore the physician must constantly fight the eternal battle against medical freedom leagues, anti-vaccinationists, drugless healers, scientists, fakers and all other riff-raff of human degenerates who trade upon the credulity of an ignorant though suffering section of the community and who profit by the honourable reputation of a worthy profession. If the art of medicine with all its ancient traditions were to suddenly cease and the populace were dependent upon these charlatans, their survival would be of brief duration, for, on account of gross ignoranc and brutality, they would be hounded out of a community as were the witches in the days of mediævalism, nor would it be a serious miscarriage of justice, if by the same method.

Unfortunately, certain of the inhabitants, through ignorance or lack of thought fail to differentiate between the true and the false and relying implicitly on the reputation of the physician, apply to quacks the same measure of credulity. For the protection of the public, for the preservation of our dignity and the peace of our immortal souls, it is essential that we combat this scourge by educating the ignorant, making the indifferent think and, by being ever on the alert, to adequately treat those psychogenetic unfortunates who are the peculiar prey of these designing sects.

Quite apart from the healing of disease, the physician holds a unique position in relation to his patients. In what one might call para-medical circumstances such as engaging nurses or procuring domestic help, solving the multiple problems of quarantine or coming to the rescue of friends and relatives in cases requiring restraint, the physician fulfills a useful function for which remuneration is seldom made. Frequently his advice is asked in matters of law, religion and finance, which unfortunately he is not always qualified to give, but he should be at least sufficiently well informed on extra-medical subjects as to indicate where the necessary knowledge may be obtained.

Lastly, there are the innumerable confidences which are repeatedly being thrust upon the medical attendant. He knows of domestic trouble, is familiar with family skeletons and is frequently the repository of individual secrets which he must never divulge. All this is as it should be, since a thorough knowledge of the human mind is as essential to the satisfactory treatment of disease as is that of the body itself. But it imposes upon the doctor an extra burden of responsibility, for such trusts he must never betray nor use for personal advantage.

4. *Duty to One's Self.* The first duty of the physician in the art of medicine is to succeed. One might ask, what is success? It has been defined thus:

> "He has achieved success who has lived well, laughed often and loved much; who has gained the respect of intelligent men and the love of little children; who has left the world better than he found it, whether by an improved poppy or a perfect poem; who has filled his niche and accomplished his task; who has never lacked an appreciation of beauty or failed to express it; who has always looked for the best in others and gave the best he had; whose life was an inspiration and whose memory a benediction."

A rather comprehensive definition, but the part which I think applies most admirably to the physician is the clause, "Who has filled his niche and accomplished his task." Not the acquiring of fame, the gaining of eminence, the accumulation of wealth, or the achieving of social or political prominence is the particular niche which he is called upon to fill, but rather the daily task of curing expeditiously those patients who can be cured, of improving those capable of improvement and of mitigating the suffering of those whose course is run and whose demise is inevitable. When one is so intimately associated with human emotions, sees patients who are frequently friends pass through various phases of suffering, sorrow, courage, perseverance, ill-supported hope and the harrowing premonitions of impending dissolution, one is prone to become less of the trained expert and more of the virile human being whose own emotions vibrate in sympathy with those in trouble. Here the physician owes a duty to himself. Since his daily routine makes such demands, he must never abandon a rational viewpoint, lose his perspective, or fail to maintain an equipoise in judgment which is in keeping with that dictatorial position rightfully belonging to him.

Again, the physician owes a duty to himself in the matter of recreation. If he is to keep himself physically and mentally fit, to enable him to cope with the problems which are daily confronting him he must have his regular hours of relaxation and his annual holidays of sufficient length to permit a thorough mental rest and rejuvenation.

Work of such an exacting nature as that of the physician is well worthy of adequate remuneration, but there is a vast difference between this and mercenary gain. There is no greater offence than that of subjecting a credulous patient to spurious and unnecessary treatment for mere monetary compensation. It is worse than the work of the bandit and profiteer. When a physician resorts to such a procedure he screens himself with a mask of respectability, betrays a confidence and brings into disrepute a calling which, in the main, has stood for centuries, unblemished before the world. On the other hand, it is just as imperative that for genuine service just recompence should be made, and seldom is the doctor adequately remunerated. How often will the timely administration of quinine, antitoxin or salvarsan save a life, for which service a few paltry dollars are paid. The iniquity of this dole is emphasized by the fact that should the doctor happen to be assessed damages, lives are valued in the thousands. At any rate, it should be demanded that legitimate accounts be paid. The laity value service at what it costs and the sooner they are educated to the fact that medical services are more valuable than rubies, the better it will be for them, for the profession and the community in general. Without being tarred by the brush of commercialism the physician should be methodical, punctual and emphatic about his accounts. Were I a member of the laity I would be suspicious of a doctor indifferent to his ledger,

for I could not help but feel that he would be slovenly in his therapeutics. I could imagine his desk which, I think, is frequently a replica of a brain, laden with a jumble of unanswered correspondence, bills payable and unanalysed urinary specimens. If he were more business-like in his book-keeping, there would be fewer doctor's deadbeats, prompter settlements by everyone and an ever diminishing number in that army of wild-cat stock vendors, financial fakirs and confidence men, all of whom look upon the profession generally as their own peculiar, legitimate and easy prey. Were it made an unalterable rule that such interviews were granted only after satisfactory introductions such as any astute financial man would demand, the profession might eventually be relieved of these annoying distractions and I am sure of an ever increasing overdraft.

It is not given to everyone in the profession, either by nature or achievement to acquire immortal fame. The spheres of some few are international in extent, those of a few more are urban, but the vast majority live, labour and die, are loved or hated, revered or maligned, in a very limited field, but no place is so restricted as to preclude opportunities. They recur in the daily routine, in the most exacting monotony or in the homes of the poorest patient. To cheerfully shoulder the burdens of the day, to inspire the unfortunate and cheer the depressed; to encourage the hopeless and relieve the suffering; to meet sorrow and disappointment with courage and fortitude becoming a man; to speak well of one's neighbour and forgive his short comings; to cultivate a geniality of soul, a broader vision and a tolerance of others' opinions; these are the opportunities which are knocking daily at the door. The true physician, indifferent to personal advantage, comfort or remuneration, seizes each one with the welfare of patient and profession, at heart. By so doing, he adds his mite to the ennobling of his calling. May it be given to us so to practise that when our allotted span of life is run, and we feel the touch of the grim destroyer summoning us to that mysterious abode from whence no traveller has returned, to that profound slumber, from which the awakening is unknown, may each one of us in all verity be enabled to exclaim, "I have filled my niche and accomplished my task."

TO THE MEDICAL PROFESSION OF CANADA:

If you are requiring an assistant or planning a holiday this summer, or a few weeks off to brush up, or possibly a honeymoon, the services of a recent graduate, or a senior student in medicine, might be desired. The student body of the province of Ontario is being canvassed with reference to summer work

Should you consider utilizing one of the men available, please forward full particulars to the Secretary of the Ontario Me ical Association, at 127 Oakwood Avenue, Toronto, making note of the following:

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A large number of senior students already has made application for positions.

A RESUME OF DIABETES MELLITUS

R. W. MANN, M.D.

Toronto

BEFORE entering on this brief discussion of what diabetes is, and its treatment, it may not be amiss to review hurriedly the basic facts of carbohydrate metabolism, as without some familiarity with them we cannot adequately appreciate the clinical problem of this disease.

The free starch not surrounded by a cellulose envelope is acted upon first by the enzyme ptyalin of the saliva during mastication, and for a short time after its arrival in the stomach. Entering the intestine, a more powerful enzyme amylopsin, quickly hydrolyzes the remaining starch and the product of both enzymes is maltose. Here also inverting enzymes, maltase, lactase, and invertase, act upon the sugars maltose, lactose and cane sugar, with the end result of glucose, galactose and levulose.

These sugars are carried to the liver by the portal circulation and there converted readily into glycogen (glycogenesis) and stored as such. Subsequently, the glycogen breaks down, yielding only glucose (glycogenolysis). The normal level of glucose in the blood is 0·07 to 0·15 per cent. and in healthy individuals is maintained desperately at this constant percentage, even starvation affecting it but slightly. From the blood, glucose is taken up by the tissue cells and utilized or may be stored as glycogen, especially in the muscles. The burning of sugar occurs from changes through a series of complex substances, and finally water and carbon dioxide result. With abundant carbohydrate to satisfy body demands, and glycogen reserve adequate, sugar is further stored as fat, the change likely occurring in the fibrous tissue. If the carbohydrate supply in food is deficient or absent, the glycogen reserve is quickly used up and then sugar is formed from protein (glyconeogenesis). This may be either from the food or from the body proteins.

Sugar introduced into the body parenterally is partly built up into glycogen, partly burned, and partly converted into fat, the body cells having a marked capacity for handling glucose.

In normal animals it is impossible to produce a glycosuria by feeding excessive amounts of starch. Even when sugars are fed in conjunction with other food, glucose seldom appears in the urine. Experience shows that in human beings tolerance for ingested sugar is doubled by giving it with a meal, hence retarding its passage into the duodenum; but if much sugar is taken into an empty stomach, rapid absorption occurs and sugar soon appears in the urine. The individual tolerance for sugar varies considerably, but the average normal individual may take 120 grams of glucose without producing a glycosuria.

If sugar absorption is slow, it nearly all reaches the liver and is there changed into glycogen. If given rapidly, some of it passes through the liver unchanged, and reaches the general circulation in this form. It is probable that a small amount regularly passes unchanged thus to the circulation, either by the liver failing to retain it, or else by way of the thoracic duct.

With these fundamental facts in mind we may turn to the question, what is diabetes? Joslin defines it as "a disease in which the normal utilization of carbohydrate is impaired, in consequence of which glucose is excreted in the urine". This should be supplemented by adding also that it is a deficiency of the internal secretion of the pancreas.

Like tuberculosis, it has been known from the earliest times, Aretæus leaving a classic record of the symptoms in the first century. Apart from the taste and smell of the urine, however, little was known until the time of Paracelsus, in the sixteenth century. Dobson, in 1776, demonstrated sugar in the urine, while Rollo, in 1797, wrote an excellent account of it and recommended a meat diet. Our own knowledge of the disease began with Bernard's investigation (1847) in which he demonstrated the origin of blood sugar and definitely connected diabetes and carbohydrate metabolism. He, it was, who named the antecedent of blood sugar, *glycogen*.

Read by invitation before the Hamilton Medical Society, May 5th, 1920. Received for publication, September 1st, 1920.

With a flexible catheter passed through an opening in the jugular vein down to the right heart, he proved that sugar was added to the blood between the femoral vein and the right heart. Later, passing this tube through the heart and down to the level of the hepatic vein, he found blood comparatively rich in sugar, thus linking up its origin to the liver.

Early English and French clinicians had observed atrophy of the pancreas in some cases and attempts were made upon animals to remove it, but all met with failure. It was not until 1889 that Minkowski and Von Mering succeeded, and showed that complete removal of the pancreas resulted in the most severe type of diabetes. Sandmeyer, in 1895, produced delayed diabetes by partial pancreatectomy with ligation of the duct. The animals thus treated do not at first become diabetic, but as the remaining portion of the gland degenerates, glycosuria develops and ultimately, due to atrophy, the same condition supervenes as when the whole gland is removed at once. It was not for many years later that the idea occurred to investigators to study weakness of pancreatic function, by removal of a portion only of this organ, leaving the remnant's blood supply and duct communication with the intestine intact. This was done in four places at the same time, all being ignorant of the other's work, viz.: by Thiroloix and Jacob, Helly, Allen, and Homans.

Allen showed that nine-tenths pancreatic removal in dogs may produce acute diabetes, while seven-eighths or less removed may give rise to a gradual onset. Some of the dogs may be kept for months on a diet within their tolerance without glycosuria, but if this is exceeded, permanent and fatal diabetes results. This analogy is regularly seen in human beings who go along satisfactorily for months, and then, by a dietary indiscretion, precipitate a much graver form of the disease.

Individual factors show also in dogs, as with identical fractions of pancreas removal, and exactly controlled conditions, one goes rapidly downward in an intense form of the disease, while the other does well.

By injecting sugar into normal animals over long periods of time so that their blood sugar is kept much higher than that of totally depancreatized animals, it has been shown that their wounds heal better and cachexia is not so apparent. This proves that diabetes is a specific disorder of nutrition in which all the body tissues have a lowered ability to withstand infection or repair injury. In human beings this is evidenced in cataract, retinitis, neuritis, pyogenic infections and tuberculosis.

The origin of the internal secretion of the pancreas is in the islands of Langerhans which undergo very characteristic changes in the experimental animals, as shown by Opie, Allen, and Mallory. These changes, Allen believes, have their parallel in human cases and are demonstrable when sufficiently careful technique and search are employed. The lack of this pancreatic secretion occasions an increased production of sugar, and a loss of the power of the tissue to utilize it. The carbohydrates are not stored in the form of glycogen and are not readily dissociated in the tissues to supply energy. Whether this inability to utlize sugar resides in the tissues themselves or in some alteration in the sugar presented to them remains undetermined. This inability to use sugar is of primary importance, as the hyperglycæmia, the glycosuria, the glycogen depletion, and the increased glyconeogenesis are in response to a constant demand of the tissues for more sugar which they cannot use.

In addition to weakened pancreatic function, glycosuria may be caused by other conditions, none of which, however, have any semblance experimentally to diabetes mellitus. Injection of adrenalin solution produces glycosuria which persists as long as this substance is present in the blood. In dogs whose adrenals have been removed, and in Addison's disease, there is a low blood sugar and increased tolerance for sugar, and adrenalin injections do not produce a glycosuria. McLeod and Pearce showed that hyperglycæmia is produced by splanchnic stimulation, but that this does not occur if the adrenals are removed or the liver denervated. Cannon finds emotional states, such as fear, accompanied by increased adrenalin secretion and occasionally by glycosuria.

Hyperthyroidism is nearly always associated with a lowered carbohydrate tolerance, indeed, this is one of our tests for this disease. Hypothyroidism, on the other hand, has greatly increased sugar tolerance. Falta claims that if the range of pancreatic function be stronger, the thyroid action will be slight and will have little influence on carbohydrate metabolism, while if this function is weak the thyroid action will be easily asserted.

Injections of extracts of hypophysis cause glycosuria. The German investigators have ela-

borated a very fascinating theory in which the pancreas and parathyroids depress carbohydrate metabolism, while the adrenals (and chromaffin system), thyroid and hypophysis facilitate the mobilization of sugar. Hence weakness of one set allows overactivity of the opposing set. While this explains many interesting facts regarding this complex disease, and while the endocrine glands are associated in a very complex way, yet other facts cannot be fitted into this scheme and their discussion here would involve too much time.

I should like to refer, in passing, to what is known as absolute diabetes, an extreme grade of severity in which a patient cannot utilize any carbohydrate taken with the food or any sugar derived from protein metabolism. Since fat cannot be converted into sugar, any glucose excreted must be derived from carbohydrate or proteid in food, or from protein of the body tissues. Each gram of nitrogen excreted in the urine represents the decomposition of 6·25 grams of protein. Hence in a starving diabetic any sugar excreted must come from tissue protein. Experimentally, we know that each 6·25 grams of protein taken into the body as food yields 3·65 grams of sugar, or 58 per cent. of the molecular complex. Hence a starving diabetic who is excreting 3·65 grams of sugar for each gram of nitrogen excreted, is said to be an absolute diabetic. This is the D:N. (dextrose-nitrogen) ratio. Such a patient cannot utilize any sugar, not even that derived from tissue protein. In such cases the patient's energy comes entirely from fat and those parts of the protein molecule not converted into sugar. This was formerly called the "fatal ratio", by Lusk, but a few cases have recovered some degree of sugar utilization.

The marked derangement of fat metabolism in diabetes is indicated by the large amount of fat in the blood, the plasma at times acquiring a creamy hue. This abnormality is regarded as secondary to the disordered carbohydrate metabolism as the "fats can burn only in the fire of carbohydrates". The obesity which precedes glycosuria in a considerable proportion of cases is explained as the result of fat formation from carbohydrate, which the organism is no longer able to burn. In some unknown way the B-oxybutyric acid of fat decomposition requires the concomitant burning of sugar, and in diabetes these acid bodies accumulate and upset the acid base equilibrium, causing the serious and dangerous group of symptoms known as acidosis. Our tests for this condition are the ferric chloride or nitroprusside tests of the urine, and the CO_2 of alveolar air, as well as of course the clinical evidence of sweet breath, languor, dyspnœa, etc.

The use of alkalies to combat this acidosis or lack of alkali reserve has not been very successful. Just why this is so, is not clear, but Joslin, Allen and Geyelin have all discontinued its use some time ago. Reliance is placed rather upon discontinuance of fat first of all, then fasting, drinking freely of liquids, and, if necessary, giving some carbohydrate for a day or two and again fasting. Geyelin has noted that it sometimes clears up when the caloric value rises sufficiently.

Ætiologically, the dominant factors in diabetes mellitus may be briefly enumerated thus,—

1. Hereditary or familial tendency.
2. Obesity and dietary excesses.
3. The strenuous life.
4. Nervous excitement and anxiety.
5. Infections.
6. Trauma of operations with possible interference with the normal action of pancreas and liver.
7. Arteriosclerosis.
8. Syphilis.
9. Thyroid disease.
10. Acromegaly.
11. Gout.
12. Bright's disease.

For the diagnosis of diabetes, probably the best single test is fermentation of the suspected sample, thus proving the presence or absence of glucose. This should always follow the discovery of a reduction of the copper solution. In collecting the urine for this test the customary single morning sample is the least satisfactory possible, as in the early or very mild cases glucose appears only transiently after meals. Hence, secure in addition an evening sample, or a specimen one and a half to three hours after the heaviest meal of the day. Such a sample is often a better means of detecting a little albumen or a few casts. Still better, of course, would be a mixture from a twenty-four hour sample. Finding glycosuria, next proceed to examine the blood sugar. With slight clinical symptoms a glucose tolerance test should be employed and this consists in examining the fasting blood sugar, then examining the blood sugar and urine, one-half, one hour, and two hours, after the ingestion of 100 grams of glucose. There is a normal rise in health and a greater rise and slower decline in diabetes. This

serves also to eliminate a class of cases called "renal diabetes" who, while having a persistent small amount of glucose in the urine, have a blood sugar which behaves normally, are able to utilize sugar perfectly, and have no other clinical sign of diabetes. Such cases are rare, however, and until proven otherwise, are better to be treated as diabetes. The following table illustrates such a tolerance test.

GLUCOSE TOLERANCE TEST

W. S. K., April 16th, 1920. Present diet—CH 175 gms, P 100 gms, F 150 gms, calories 2350 per diem.

Blood sugar—0·96 per cent. (fasting).

" " —0·136 per cent. 1 hour after 100 grams glucose.

—10.00 a.m.—100 grams of glucose given in coffee.

Urine—10.30 clear, acid, 1012—no sugar, no diacetic acid.

Urine—11.30 a.m. clear, acid, 1018—sugar, 0·7 per cent., no diacetic acid.

" —12.00 a.m. clear, acid, 1013—no sugar, no diacetic acid.

In connection with blood sugar we should remember that the percentage is increased after exercise but also, that the tolerance for sugar is greater in both normal and diabetic cases after muscular effort.

Finding the urine sugar free in a known diabetic is not alone a sufficient guide, since the blood sugar level may have become raised. Mild diabetes complicated by a nephritis presents this problem, since with the advance of the nephritis, the permeability of the kidney becomes less, and glucose is excreted with more effort.

The history of diabetic therapy has consisted mainly of two principles:

1. The restriction of sugar-yielding foods, carbohydrate and protein.

CASE NOTE No. 1 W. S. K., came complaning of frequency of urination, great thirst, and some insomnia for three months. His family history was negative. He is a lumberman and while in charge of his men in the Maine woods, lived over a small store, in passing through which he was constantly eating candy, and wanted more and more sugar in his food, as well as using maple syrup freely. He readily conformed to diabetic discipline and did very well, as his chart shows. Blood pressure 125–90, hæmoglobin 90 per cent.

W. S. K.—Age, Forty-five.—Height, 5′ 10″

Date	Vol. c.c.	Sp. Gr.	Reac.	Alb.	Acetone	Diacetic Acid	Sugar in Urine: Reduction %	Diet in Grams: Carbohydrate	Protein	Fat	Alcohol	Calories	Weight Lbs.	Blood Sugar %	Blood CO_2 mm. Hg.	Alveolar air CO_2 mm. Hg.
1919																
April 30.	2000	1040	ac.	–	–		5.	Ordinary diet					191	..	..	..
May 1.	2500	1040	"	–	–	–	2.5	"	"	"			..	..	..	..
" 2.	3500	1018	"	–	–	–	2.5	"	"	"			189½	0.15	..	..
" 3.	4200	1015	"	–	–	–	1.	"	"	"	less fat		..	..	..	..
" 4.	4000	1015	"	–	–	–	1.1	"	"	"	"		..	..	..	..
" 5.	3700	1015	"	–	–	–	1.2	Take ordinary diet, but no					..	..	..	..
" 6.	3500	1016	"	–	–	–	1.	fat, no sugar, and halve the carbohyd rate					..	..	..	..
" 7.	3500	1009	"	–	–	–	0.25	30	30	30	–	510	184½	..	..	..
" 8.	3000	1015	"	–	–	–	–	30	50	30	–	640	..	0.12	..	..
" 9.	3000	1012	"	–	–	–	–	35	60	50	–	830	182	..	..	..
" 10.	3200	1012	"	–	–	–	–	35	60	50	–	830	..	..	..	..
" 11.	3500	1015	"		–	–	–	35	60	50	–	830	..	..	..	..
" 12.	3400	1012	"	–	–	–	–	18	30	25	–	415	..	..	..	..
" 13.	3000	1016	"	–	–	–	–	35	60	50	–	830	..	..	..	..
" 14.	2800	1012	"	–	–	–	–	36	81	75	–	1143	181½	..	..	..
" 15.	2500	1015	"	–	–	–	–	36	81	75	–	1143	..	..	..	..
" 16.	2000	1020	"	–	–	–	–	40	90	110	–	1510	181	..	..	..
" 17.	2500	1018	"	–	–	–	–	40	90	110	–	1510	..	..	..	..
" 18.	2400	1015	"	–	–	–	–	20	45	55	–	760	178	..	..	..
" 19.	2800	1015	"	–	–	–	–	45	90	110	–	1530	..	0.11	..	..
June 25.	reached		"	..	..	..	..	175	110	150	–	2490	163	0.12	..	..

2. The cutting down of the total caloric value of the intake.

Willis early instituted a bread, milk, and barley-water cure. This diet probably had other objects in view but under-nutrition was achieved. Rollo suggested animal food and in this way carbohydrate restriction was accidentally discovered. The excessive use of protein and fat showed itself, and fast days were introduced. Von Noorden introduced his oatmeal cure and it was thought to have special properties until Blum declared it to be like any other form of starch. The vegetable and green days associated with it gave under-nutrition, and no doubt contributed to its popularity. Allen as a result of his elaborate experimental studies and experience with human cases, insisted that as the disease is the result of a weakened assimilative function, the only way to help it is by lightening the total caloric load, in addition to limitation of carbohydrate.

The principles guiding us are in a general way:

1. To render the urine sugar free.
2. To reduce the blood sugar to normal.
3. To avoid acidosis.
4. To maintain the patient's health and strength.

The patients are cautioned to make no variation in their diet until a twenty-four hour sample of urine has been obtained and examined, blood sugar, and CO_2 estimated, unless serious acidosis is manifest or impending. The fats are then eliminated for a day or two, and either a closely restricted diet or fast is commenced, suddenly or gradually, as conditions warrant, until the urine is sugar free and fasting blood sugar is normal. Then beginning with low caloric values, a very gradual increase is instituted, observing weekly half days or fast days. The weakened assimilative functions are thus rested, and gradually called into activity again. With the drop in body weight, there is a marked drop in caloric

CASE NOTE No. 2. W. J. W., came for relief of lack of energy, thirst, frevent urination, and loss of weight extending over a period of two months. He is a carpenter, or rather a carpenter's helper. Blood pressure 145–95, hæmoglobin 90 per cent. He had some oral sepsis, and his tonsils were considerably enlarged. There was a slight mitral systolic murmur, but the apex was normal in position. Physical examination of the heart, lungs and abdomen was otherwise negative. Family history negative. In spite of being of very poor education, with patience, he grasped the principles of food values, the weighing of his own food, made a good recovery and has been carrying on ever since.

W. J. W.—Age, Thirty-eight.—Height, 5′ 10″

Date	Vol. c.c.	Sp. Gr.	Reac.	Alb.	Acetone	Diacetic Acid	Sugar in Urine: Reduction %	Diet in Grams: Carbohydrate	Protein	Fat	Alcohol	Calories	Weight Lbs.	Blood Sugar %	Blood CO_2 mm. Hg.	Alveolar air CO_2 mm. Hg.
1919																
Oct. 24.	1041	1041	Ac.	–	+	+	3.8	Ordin	ary di	et		?	139¾	..	..	..
" 25.	922	1038	"	–	+	+	1.5	"	"	"		?	"	0.19	..	30
" 26.	1520	1028	"	–	+	+	1.	33	27	0.6	–	252	138	..	..	..
" 27.	1456	1010	"	–	–	–	0.4	Starv	ation			..	137	..	..	..
" 28.	1500	1013	"	–	–	–	–	15	30	33	–	501	135½	0.11	..	..
" 29.	1550	1011	"	–	–		–	21	41	60	–	788	134½	..	..	..
" 30.	1800	1012	"	–	–	–	–	35	60	100	–	1320	133½	..	..	..
" 31.	2860	1015	"	–	–	–	–	45	63	120	–	1570	134	..	..	..
Nov. 1.	2460	1015	"	–	–	–	–	46	70	128	–	1672	134	..	..	..
" 2.	3130	1012	"	–	–	–	–	62	74	138	–	1821	..	..	..	..
" 3.	....	....	"	–	–	–	–	Starv	ation	day		..	..	..	..	..
" 4.	3120	1012	"	–	–	–	–	60	75	140	–	1800	..	0.11	..	..
" 5.	2800	1012	"	–	–	–	–	65	75	140	–	1900	..	..	..	..
" 6.	1730	1014	"	–	–	–	–	75	80	150	–	1970	133	..	..	..
" 7.	2300	1016	"	–	–	–	–	85	80	160	–	2100	..	..	..	..
" 8.	2370	1015	"	–	–	–	–	100	80	160	–	2160	134	..	..	..
" 9.	2800	1014	"	–	–	–	–	115	80	160	–	2220	..	..	..	..
" 10.	2640	1014	"	–	–	–	0.6	125	80	175	–	2468	134½	..	..	..
" 11.	2570	1012	"	–	–	–	0.25	100	80	175	–	2368	..	..	0.14	..
" 12.	2740	1016	"	–	–	–	–	Starv	ation	day		..	..	..	..	..
" 13.	2800	1013	"	–	–	–	–	50	75	150	–	1850	133½	..	..	..

requirements, and at the same time a rise in the tolerance. The diet contains protein to protect the body nitrogen, carbohydrate to prevent any serious acidosis, but is deficient in fat to compel burning of the body fat, and thus reduce the caloric needs.

Some time ago Mosenthal, in interesting studies, pointed out the value of protein in the diabetics' diet, and the importance of adequately using it to maintain the body nitrogen. Recently Allen has again called attention to this point and outlines five guiding principles in planning diets after fasting.

1. Begin with low total calories and increase gradually.
2. Protein is the most important food.
3. Protein tolerance is greatest when other foods are excluded.
4. The caloric requirements fall with the body weight.
5. The tolerance rises as the weight of the body falls.

"Under any conditions the ultimate criterion of the severity of diabetes is the level of the diet, and the body weight, which can be endured without return of symptoms."

It is surprising at times to note the improvement of tolerance after weeks or months of careful dieting. We aim to establish a diet of at least 1500 to 2000 calories, roughly consisting of 1·5 to 2 grams protein per kilo of body weight, 100 to 150 grams of fat and a carbohydrate value at least 30 per cent. below their limit of tolerance determined by testing out, with the diet, the point where glycosuria occurs. Mosenthal finds an ultimate diet of equivalent amounts of fat and proteid most palatable for prolonged feeding.

A rapid grain in weight, especially during the very low diet or starvation, should cause search for œdema. This may occur very suddenly and be quite extensive. Comparison of the fluid intake and output will show a retention of fluid. It is believed to be due to salt retention following the free use of it on thrice cooked vegetables or in broths. The œdema retains sodium and potassium salts in the blood and

Case Note No. 3 C. H. H., came under observation having a history of glycosuria five years ago, and now complained of occasional nausea, itchiness of the skin, and some headache. Five years ago following hæmorrhage into the right eye, glaucoma developed, requiring operation. He had slight tonsillar infection, and some hypertension, his blood pressure being 175–100. His family history was negative, but he used sugar to excess, previous to five years ago. He made good progress and has since been able to maintain the conditions noted below.

C. H. H.—Age, Sixty-three.—Height, 5′ 9″

Date	Vol. c.c.	Sp. Gr.	Reac.	Alb.	Acetone	Di-acetic Acid	Sugar in Urine: Reduction %	Diet in Grams: Carbo-hydrate	Protein	Fat	Alcohol	Calories	Weight Lbs.	Blood Sugar %	Blood CO_2 mm. Hg.	Alveolar air CO_2 mm. Hg.
1919																
Feb. 22.	?	1033	Ac.	–	–		3.3	Ordinary					163½	..	..	..
" 23.	?	1032	"	–	–	–	3.3	Ordinary					..	0.23	..	..
" 24.	1372	1021	"	–	–	–	0.75	80	29	–	–	487.9	..	..	..	..
" 25.	2268	1019	"	–	–	–	0.55	70	30	–	60	584	162	..	..	..
" 26.	2352	1011	"	–	–	–	0.3	–	45	50	60	823.5	161½	..	..	..
" 27.	2632	1012	"	–	–	–	trace	22	3	4	60	310	..	..	..	..
" 28.	1800	1015	"	–	–	–	–	–	–	–	60	174	..	..	..	..
" 29.	4000	1012	"	–	–	–	–	–	–	–	60	174	160¼	0.14	..	..
Mar. 1.	3810	1020	"	–	–	–	–	20	30	50	60	803	..	..	..	..
" 2.	3500	1015	"	–	–	–	–	30	50	50	60	844	..	..	..	..
" 3.	4480	1010	"	–	–	trace	–	35	60	50	60	1028.5	..	..	..	..
" 4.	2044	1009	"	–	–	"	–	40	70	50	60	1090	157	..	..	..
" 5.	3640	1007	"	–	–	faint trace	–	60	50	75	60	1322	..	..	..	..
" 6.							–	75	50	75	100	1500	..	0.12	..	..
" 8.	2856	1010	"	–	–	–	–	75	60	125	60	1890	157½	..	..	..
" 9.	1400	1009	"	–	–	–	–	100	60	140	60	2132	..	..	..	..
" 10.	2940	1007	"	–	–	–	–	105	65	140	60	2173	158½	0.12	..	..
" 11.	1904	1008	"	–	–	–	–	..	..	..	..	..	..	..	..	..

helps probably, in maintaining the acid-base equilibrium.

High fat feeding was undoubtedly the cause of much of the diabetic coma formerly. In the Presbyterian Hospital in New York, Geyelin reports the cases over two four year periods under new and old methods of treatment. The deaths under the newer method were 11 per cent. and the older 21 per cent. Coma caused death in 25 per cent. of the cases of the last four years, while it accounted for 66 per cent. in the preceding four years. The initial fast and lowered fat feeding are regarded as the chief causative factors of this change.

It is important to teach the patients the intelligent understanding of their own cases in the way of its pitfalls and the absolute necessity of strictly adhering to diet. To this end it is essential to have them for a considerable period under a surveillance, in which they are taught to accurately weigh their own food, compute the elements of their own diet, test their own urine for sugar and diacetic acid, and thus relieve the tedium of the "cure". They must realize that they are not normal people, and must learn to regulate their activities according to their caloric intake.

Overeating is a common fault in these modern days and by reference to the accompanying chart this overeating is frequently in the form of extra foods taken apart from meals, at afternoon teas, after the theatre, or in warm weather at the soda fountain. You will note the not inconsiderable caloric values easily consumed at such times. In addition many people indulge in these accessories of diet to excess, thus taking on a comparatively fasting stomach foods containing a high percentage of sugar. As I have already

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Case Note No. 4. Mrs. J. H., came with a history of glycosuria of one month's duration, but with symptoms suggestive of having had the condition for four months. She is a distinctly neurotic type and a life-long worrier. January, 1919, she suffered from a marked neuritis of the left upper extremity which she herself associated with having eaten six pounds of candy, and a lot of raisins during the Christmas week, 1918. She had no other previous illness of moment, and the family history was negative. Blood pressure 130–75, hæmoglobin 95 per cent. She was a difficult patient from the start, promising adherence to discipline and being constantly detected in deception. She could not afford hospital supervision and by constantly breaking discipline could make no progress with her case.

Mrs. H.—Age, Thirty-eight.—Height, 5′ 2½″.—Highest weight, 110 pounds. (June, 1919)

Date	Vol. c.c.	Sp. Gr.	Reac.	Alb.	Acetone	Diacetic Acid	Sugar in Urine: Reduction %	Diet in Grams: Carbohydrate	Protein	Fat	Alcohol	Calories	Weight Lbs.	Blood Sugar %	Blood CO_2 mm. Hg.	Alveolar air CO_2 mm. Hg.
1919																
Jan. 3.	?	1012	Ac.	–		–	0.5	Ordinary diet				?	89	..	..	..
" 4.	3000	1012	"	–	–	–	0.25	"	"	"		?	..	0.2	..	35
" 5.	2800	1012	"	–	–	–	faint	16	72	58	–	874	..	..	..	..
" 6.	2800	1015	"	–	–	–	–	16	72	58	60	1048	..	..	..	..
" 7.	2860	1015	"	–	–	–	–	16	72	58	60	1048	..	0.15	..	..
" 8.	2850	1015	"	–	–	–	–	16	72	58	60	1048	..	..	..	
" 9.	1800	1025	"	–	–	–	1.	20	70	50	60	984	..	..	..	.
" 10.	3000	1014	"	–	–	–	–	Starvation day					90	..	..	
" 11.	4000	1012	"	–	–	–	–	15	30	30	60	624	..	..	..	.
" 12.	4500	1012	"	–	–	–	–	15	30	30	60	624	..	..	..	.
" 13.	3500	1012	"	–	–	–	0.25	15	30	30	60	624	..	0.16	..	..
" 14.	3010	1015	"	–	–	–	–	Starvation day				?	90	..	..	..
" 15.	4060	1016	"	–	–	–	–	15	30	30	60	624	..	..	..	..
" 16.	4080	1018	"	–	–	–	–	15	30	30	60	624	..	..	..	..
" 17.	3560	1016	"	–	–	–	–	15	60	40	60	834	91	..	..	..
" 18.	3250	1015	"	–	–	–	0.25	15	60	40	60	834	..	..	..	..
" 19.	3500	1016	"	–	–	–	–	Starvation day				?	..	..	..	..
" 20.	3750	1015	"	–	–	–	0.25	15	30	30	60	624	91	..	..	..
" 21.	3700	1012	"	–	–	–	0.25	Starvation day				?	..	..	..	..
" 22.	3680	1011	"	–	–	–	–	15	30	30	60	624	..	..	..	..
" 23.	3750	1012	"	–	–	–	–	15	60	40	60	834	90¾	..	..	..

noted this is particularly harmful to a weakened pancreatic function, as recently proven by Allen experimentally upon partially depancreattized dogs.

THE ENERGY CONTENT OF EXTRA FOODS (BENEDICT)

	Cost.	Calories.
Peter's Chocolate	.10	220
Lowney's Milk Chocolate	.06	321
Walter Baker's Vanilla Chocolate	.05	581
Park & Tilford's Chocolate	.10	641
Lady Fingers—one	–	68
Macaroon—one	–	42
Graham Wafer—one	–	44
Oatmeal Cookie—one	–	45
Chocolate Ice Cream Soda	.15	467
Maple Walnut Sundæ	.15	419
Chocolate Ice Cream Cone	.05	132
Ginger Ale	.15	136
Grape Juice	.19	315

Just a word regarding the diabetic as an operative risk. Unless it is a case of great urgency, a preliminary course of dieting should be undertaken, to reduce the blood sugar to normal level and free the urine from glucose. Thus treated, there is an enormous improvement of their capacity for wound healing and the avoidance of infection. Ether is not the anæsthetic of choice, since the blood-ether mixture seems to dissolve a considerable amount of fat from the tissues and certainly gives rise to marked hyperlipæmia, as shown by Bloor as well as by Sansum and Woodyatt, quoted by Fitz in his interesting article. At the same time, it causes the glycogen of the liver to break down, resulting in hyperglycæmia. There is, likewise, a temporary sup-

CASE NOTE NO. 5. J. H., this patient, a railway engineer, gave a history of great weariness and weakness, marked loss of weight, paræsthesia of the lower extremities and great thirst gradually developing for a period of two years. In August, 1917, his gall bladder was opened and the appendix removed. April, 1919, he had many septic teeth removed. He presented marked evidence of tonsillar infection and his tonsils were removed October 28, 1919, by Dr. Goldsmith. Family history negative. Blood pressure 130–95, hæmoglobin 90 per cent. Physical examination of the heart and lungs was entirely negative. He ultimately made little or no progress, but one month ago was still alive but somewhat weaker. He constantly worried over his unemployment, and during the time he was under treatment his mother died. This is one of the unfavourable cases where the disease has been in existence for considerable time and in which the outlook is very poor.

J. H.—Age, Thirty-nine.—Height, 5′ 7″.—Highest weight, 170 pounds (two years ago)

Date	Vol. c.c.	Sp. Gr.	Reac.	Alb.	Acetone	Diacetic Acid	Sugar in Urine: Reduction %	Diet in Grams: Carbohydrate	Protein	Fat	Alcohol	Calories	Weight Lbs.	Blood Sugar %	Blood CO_2 mm. Hg.	Alveolar air CO_2 mm. Hg.
1919																
Oct. 2.	7500	1025	Ac.	trace	–	–	3.5	Ordinary diet				?	121	0.32	..	40
" 25.	2000	1014	"	–	–	–	–	15	30	30	60	624	116¼	0.15	..	35
" 26.	2520	1013	"	–	–	–	–	16	53	38	60	788	..	..	..	..
" 27.	2500	1015	"	–	–	–	1.2	20	70	50	60	984	116	(Pus tonsil	n tonsils, left removed)	
" 28.	2800	1012	"	–	–	–	0.25	15	30	30	60	624	115½	..	..	..
" 29.	3000	1017	"	–	–	–	–	15	50	50	60	884	..	..	..	..
" 30.	2520	1012	"	–	–	–	–	15	50	50	60	884	..	..	..	..
" 31.	2800	1014	"	–	–	–	–	20	55	75	60	1179	115¾	..	..	..
Nov. 1.	..	..	"	–	–	–	–	Starvation day				..	..	..	..	..
" 2.	2800	1012	"	–	–	–	–	20	60	85	60	1259	..	..	..	..
" 3.	3000	1012	"	–	–	–	–	20	60	80	60	1214	..	..	..	..
" 4.	2500	1014	"	–	–	–	–	20	60	80	60	1214	..	0.18	..	..
" 5.	2800	1015	"	–	–	–	–	30	60	100	60	1434	115½	..	..	..
" 6.	3080	1012	"	–	–	–	–	34	70	117	60	1688	..	..	..	..
" 7.	..	..	"	–	–	–	–	Starvation day				..	..	..	..	..
" 8.	2500	1018	"	–	–	–	–	40	70	130	60	1834	116	..	..	..
" 9.	2550	1017	"	–	–	–	–	40	80	145	60	1959	..	..	..	..
" 10.	2580	1013	"	–	–	–	–	45	80	150	60	2024	115½	..	..	..
" 12.	2500	1018	"	–	–	–	0.7	45	80	150	60	2025	..	..	..	..
" 13.	2500	1020	"	–	–	–	–	Starvation day				..	..	0.21	..	..
" 14.	2500	1016	"	–	–	–	–	15	30	30	60	624	115	..	..	.
" 15.	3080	1014	"	–	–	–	0.55	20	50	100	60	1490	..	.	.	

pression of the secretion of the urine, nitrogen, glucose, and acetone bodies, of several hours' duration. Under these conditions, an acidosis is very readily precipitated and death from coma very apt to result. Local anæsthesia is safest for minor operations while gas and oxygen is the one of choice for major operations.

The details of treatment are exemplified somewhat in the accompanying charts of patients of Dr. H. B. Anderson and my own.

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DIVERTICULA OF THE URINARY BLADDER

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UNTIL recent years, the occurrence of single or multiple diverticula of the urinary bladder has been considered a somewhat rare anomaly, the attempt at a radical cure of which presented considerable surgical difficulties. Thus in a comprehensive article on this subject published in February of 1912, Lerche gave a resume of all the cases that he had been able to find reported in the literature to that date, a total of only fifteen.[1]

It would appear, however, that modern methods of diagnosis have demonstrated that this condition is not of extreme rarity. Judd reports forty-four cases from the Mayo Clinic up to March, 1918[2], and Hinman has a series of twenty-one cases up to August, 1919[3]. Rathbun of Brooklyn reports five cases seen within one year[4].

Ætiology. The ætiology is obscure, and the dictum of Englisch[5] that "all diverticula having a muscular coat are congenital, while those with a mucous coat only are acquired", possibly needs revision.

Cabot is of the opinion that "Diverticula probably originate from congenital buds which do not go on to ureter formation, and that hernial protrusions in obstructive cases are not diverticula."[6]

Thomas, writing from the Mayo Clinic[7], says, "The rôle that obstruction plays in the formation of these anomalies is not clear, but clinically in a large percentage of cases, it seems necesasry for the development of symptoms. Judd[8] points out that in most cases the openings of the diverticula were not far from one of the ureteral meatuses, but the relationship was not at all constant. He goes on to say that many cases have been cited to show that obstruction is not a factor in the development of the condition. It has been repeatedly demonstrated that, in cases where obstruction does exist, and is removed, the diverticulum persists and continues to cause symptoms, and he suggests that it is possible that this, *i.e.*, the presence of an unsuspected diverticulum, may explain some cases which have not been relieved of symptoms after prostatectomy.

The consensus of opinion appears to be that a congenital deformity or lack of development is a factor in all these cases, but while this may be true it seems reasonable to presume that a very small and symptomless diverticulum might be present for many years, which in the presence of obstruction might dilate, become infected, and produce symptoms.

Incidence. Diverticula occur almost exclusively in the male, though cases have been reported in the female.

The age of the reported cases varies from eighteen to seventy-three years, but the majority are well over fifty.

Symptoms. The symptoms vary with the presence or absence of infection. The most characteristic subjective symptom is a feeling that the bladder is not emptying itself, which in turn produces a frequent attempt to urinate. This frequency may be both diurnal and nocturnal. Another suggestive symptom is the complaint of a difficulty in starting the stream, yet when once started it flows quite freely. This probably depends on the fact that when the bladder contracts the diverticulum is distended, hence not enough pressure is exerted on the internal sphincter to cause it to relax. Consequently additional pressure is required and the attempt is made to supply it by straining efforts of the abdominal muscles. Pain in the lower abdomen, sometimes constant, sometimes colicy, is a variable symptom. It may be severe, and may be referred to the groins, or upward to the loins, in which case renal lithiasis may be suggested. It is probably due to the degree of distension of the diverticulum.

The appearance of the urine varies with the degree of infection, but in cases with symptoms a certain amount of pus is usually present, and this may vary considerably in amount from day to day, the urine being sometimes quite clear, and sometimes very cloudy. While doing bladder lavage, a very suggestive occurrence is to have one or more washings come away quite clear, while the next may contain considerable pus. Blood may be present in microscopic amounts, or more rarely there may be frank hæmaturia.

It will probably be seldom that the symptoms will be definite enough to permit of a diagnosis from them alone, but they should in many cases suggest the possibility of a diverticulum being present.

Diagnosis. Cystoscopic examination will, in most cases, permit of a definite diagnosis being made, and in some cases the cystoscope may be passed directly into the diverticulum permitting of direct observation of its extent. In other cases, fine silver wire or better, an "*x*-ray" opaque ureteral catheter may be passed through the cystoscope into the diverticulum, where it will coil up, and a rœntgenogram will then give a definite picture of its extent and location.

In certain cases, where the bladder is very irritable or the urine contains much pus or blood, the diagnosis may be impossible with the cystoscope alone. In any event the bladder should be distended with a radio-opaque media, and a cystogram made. The various salts of silver and of thorium have been used for this purpose, but a twenty-five per cent. solution of sodium bromide is probably as satisfactory as any. It is inexpensive, easily obtained, easily sterilized, not particularly irritating to the bladder mucosa, and in addition gives an excellent shadow. The cystogram may show one or more diverticula completely, but more often will show a part of the fundus only, the main portion being hidden by the shadow of the bladder itself. Exposure from various angles, or stereoscopic plates will each help in arriving at a correct diagnosis of obscure cases.

Treatment. Methods of treatment which do not aim at a rational attempt at radical removal of the diverticulum should be discarded. Under this head may be placed such crude efforts to bring about cure as incision through the vaginal wall, or the establishment of a fistula by suture of the fundus of the diverticulum to the skin, forcible dilatation of the neck of the sac, or curettage of the mucous membrane of the sac followed by suture of the neck, should also be discarded. In rare cases where the diverticulum is placed alongside the bladder rather than projecting away from it, success may be achieved by a method introduced by Squier[9], which consists in a division of the intervening walls between pressure forceps, and suture of the adjoining edges thus converting the two cavities into one much as in a Finney pyloroplasty.

In general, however, nothing short of a clean-cut dissection and complete separation of the sac, followed by its surgical removal at the neck, with suture of the resulting opening in the bladder wall should be attempted. This may be carried out supra-pubically by either the extra or intra-peritoneal methods of approach, but while the latter may be necessary in some cases, the former is much preferable, and it is very surprising what a degree of exposure of the bladder wall may be secured by the use of care and gentleness in brushing back the peritoneal covering. The bladder having now been opened in the median line, the position, size and number of the diverticula having been definitely determined by inspection and digital examination, their removal may be proceeded with. To facilitate this, Lower suggests packing the cavities with gauze, and Lerche uses a distensible rubber bag for the same purpose. As a rule, however, the insertion of the operator's left forefinger into the sac from inside the bladder, while the right hand works extra-vesically, will prove to be the most useful method of attack. The extra-vesical fatty and fibrous tissues should be brushed away from the sac by blunt dissection until the entire sac is isolated down to the neck. During this manipulation great care should be exercised to avoid damage to the ureter, and this may be rendered more certain by previous catheterization of the ureters, leaving the catheters *in situ* until this part of the operation is complete.

When the entire sac is completely isolated, it should be inverted into the bladder, the neck transfixed and ligated intra-vesically, and the remainder incised. The deficiency in the muscular wall of the bladder may then be closed by continuous suture extra-vesically, and the surrounding fibrous and fatty structures approximated in one or more layers, thus eliminating any dead space. It might be well to leave a cigarette drain down to the suture line in the bladder wall. The median vesical incision is now closed around a fair-sized rubber drain, and the anterior abdominal wall sutured in the usual manner. If multiple diverticula are present, they are of course dealt with in the same manner.

In 1918, Young, of Baltimore,[10] described a method of dealing with this condition, by what he termed intra-vesical invagination by suction. His article is profusely illustrated, and the opinions of such an authority must be given some weight. It would seem, however, that invagination of a true diverticulum by suction would be impossible, that the most that could be accomplished would be the invagination of the mucosa alone, leaving the muscular coat *in situ*, which

would certainly predispose to recurrence. In certain cases of saccular herniation of the mucous coat of the bladder through deficiencies in the muscular wall produced by over stretching following urinary obstruction, Young's method might be of value, but these saccules are not true diverticula.

The following case typically exemplifies some of the above mentioned points:

J. C., male, age seventy-one years. Condition on August 1st, 1920:

Complaints. Pain in the region of the bladder and left lower abdominal quadrant. This pain is sometimes intense and colicy, and occasionally is referred to the left loin. Difficulty in starting the urinary stream. Constant desire to urinate. Loss of appetite, weakness, and consequent inability to work.

Previous history. These symptoms have been present for about three years, gradually getting worse. I saw him first about six months ago when he was referred to me by Dr. Wiley, of this city, for "*x*-ray" examination for possible stone in the kidney or bladder. The rœntgenographs were negative. He had, however, a fairly tight stricture of the bulbo-membranous urethra. This was successfully treated by gradual dilatation, without relief of the symptoms, except that whereas he previously had had difficulty in passurine, he now has difficulty in starting the stream but when once started it comes quite freely.

Present condition. A spare, undernourished, elderly man, with well marked general visceroptosis, and a bilateral inguinal hernia.

Urine. Specific gravity 1022, moderate amount of albumin, no sugar. A considerable number of pus cells, and an occasional red blood corpuscle. While under observation, the urine varies greatly sometimes being almost free from pus, and again containing a large amount; at times no red corpuscles, at other times a large number.

Cystoscopic examination was unsatisfactory, owing to the pain caused by attempted distension of the bladder.

Cystograms were made with the bladder containing ten ounces of 25 per cent. watery solution of sodium bromide. One very definite diverticulum was revealed, with what appeared to be the fundi of two more. (Fig. 1.)

As it was evident that the man was rapidly losing ground through toxic absorption, pain and loss of sleep, radical operation was determined on, and carried out on August 23rd, 1920.

Ether anæsthesia, Trendelenberg position, bladder distended with boracic solution. Median incision from two inches below the umbilicus to the symphysis. Prevesical space opened and the peritoneum stripped well back from the fundus and the posterior wall of the bladder. This step was easily accomplished. The bladder was now opened by a median incision at the fundus. On examination of the interior, three abnormal orifices were found, two on the right side and one on the left. On the right side these orifices were about one inch apart, the one obliquely above, behind, and outside the other, which in turn was a similar distance in the same direction from the ureteral opening. On the left side the ori ce corresponded in position with the lower on the right. Each of these orifices was about three-eighths of an inch in diameter, but could readily

FIG. 1—Cystogram. Note Diverticula "A", "B", "C".

be stretched to admit the gloved forefinger. Exploration by the finger showed that immediately outside this orifice was a sac about one inch in diameter and one and a half to two inches in depth. Roughly speaking, all three were approximately of the same size. Examination of the outer side of the bladder with the left forefinger still within the sac showed that it was covered with irregular bundles of fibro-fatty tissue, whi h was rather closely adherent to the sac wall proper. Beginning with the highest sac on the right this layer was carefully dissected off, the left forefinger within the sac being of great assistance in fixing and rendering it prominent. Both sharp dissection and gauze displacement proved useful and eventually the sac was completely freed down to the neck. It was now inverted into the bladder and the neck ligated intravesically. The bladder wall was then reinforced on the outside by a continuous suture taking in all the coats but the mucosa, and the same procedure was carried out

on the second or lower sac. This proved to be somewhat more difficult owing to the depth, but eventually was successfully carried out, and the bladder wall sutured within and without as before. The displaced fibro-fatty layer was then approximated by a running suture to obliterate the dead space, and a cigarette drain inserted. The single sac on the left side was then treated in the same way, and the dead space similarly obliterated and drained. During all this dissection a sharp watch was kept for the ureter and vas deferens, but neither was encountered.

The bladder incision and abdominal wound were now closed in the usual manner leaving a large rubber drain in the bladder.

The operation had required about two hours, but the patient left the table in good condition, and his convalescence was surprisingly uneventful. The tube was removed on the fifth day, and the patient was out of bed on the seventh. He left the hospital on October 15th, with a very small sinus which subsequently completely closed, and on November 15th reported that he was completely free from symptoms and ready to go back to work.

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The Halifax Meeting.—July 5th—8th, 1921. An important communication has been received from the Chairman of the Local Committee of the Halifax meeting with reference to hotel accommodation. He urgently requests that it be secured at the earliest possible moment, by writing to Dr. H. K. MacDonald, 133 Spring Garden Road, Halifax. Applicants should specify choice of hotel and nature of room desired (see March number). They should also indicate as definitely as possible, time of arrival and extent of stay. Provided applications are made in time, the Committee promises to find room for all visitors.

VALUE OF FLUOROSCOPY IN THE DIAGNOSIS OF ABDOMINAL CONDITIONS

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"FLUOROSCOPY" is the method of making studies of opaque objects by passing through them the *x*-rays and observing the image produced on a fluorescent screen. Non-opaque objects, such as hollow organs of the gastro-intestinal type, may be examined by filling them with material which is opaque to the *x*-rays.

The fluoroscopic method has met with prejudice in many quarters, owing to the ill effects of *x*-ray exposure in the early days, when the need of adequate protection was not understood. With the protection afforded to-day there should be no danger to either patient or operator. The patient is exposed to amounts of *x*-ray that can exercise no harmful effect A current of two to five milli-amperes with a voltage correspondng to a three to six-inch spark-gap is all that is required with even the heaviest patient There is no danger to the operator, with the fluorescent screen covered with lead glass on the operator's side, if he is careful to keep the size of diaphragm so regulated as to keep the emitted rays well within the borders of the lead glass. Manipulation of the part being examined behind the screen is done with a wooden spoon, or with the hand of the operator, protected by lead-rubber gloves. Although the work is done in a dark room, there is no reason why adequate ventilation cannot always be obtained.

Fluoroscopy being purely a subjective method, the value of the findings depends entirely upon the personal equation. Upon the ability of the operator to interpret correctly the images seen upon the fluorescent screen, and upon the care with which he makes the examination, depends the value of the findings. This is not the field for the *x*-ray technician. The sole function of the *x*-ray technician is the making of good *x*-ray plates. The interpretation of those plates, as well as the interpretation of fluoroscopic images, should be made only by a physician. That physician must not only be well versed in the anatomy, physiology and pathology of the organs under examination, but must also have special training in the *x*-ray appearances of normal and diseased tissues and organs.

The committee which allotted the subject of this paper has given happy expression to the relationship between "fluoroscopy" and "diagnosis" by entitling the paper, "The Value of Fluoroscopy *in* Diagnosis." There is no such thing as "fluoroscopic diagnosis." There is no such thing as an *x*-ray diagnosis, except possibly in the fracture of bones and the detection of metallic foreign bodies. Fluoroscopy is one of the factors contributing to the building up of the diagnosis. Diagnosis is a conclusion reached after correlating the information obtained by all the available clinical methods. Careful history taking, painstaking physical examination, accurate laboratory reports, are all part of the clinical process. Co-ordinated with these, as a fourth clinical procedure, stands the *x*-ray examination, including that most important phase, fluoroscopy. The clinical picture should be arrived at by correlating the information obtained from each of these methods and building all up into a complete diagnostic entity. If this be true, and we hope to be able to show that it is, then the clinician who arrives at a diagnosis without using fluoroscopy where fluoroscopy is available and indicated, is not only rendering his diagnosis less complete and exact, but is doing an injustice to his patient.

What information can fluoroscopy give us in the examination of the abdomen? We shall answer that question, not by attempting to show the superiority of fluoroscopy over other clinical methods, but by showing the contribution which it can make toward the sum total of clinical information obtainable in any given case.

Under the heading "abdominal conditions" will be comprised conditions obtaining in the gastro-intestinal tract, the gall bladder, the liver and spleen, the kidneys, ureters, bladder, and in the

Read at the Manitoba Medical Association, November 19th, 1920.

female pelvic organs. With the exception of the gastro intestinal tract, including the gall bladder, fluoroscopy is not a primary diagnostic procedure.

The liver and spleen throw shadows on the screen, from which we may determine their position and size. Being placed well under the rib margins they do not normally lend themselves to palpation. The kidneys occasionally may be outlined in very thin subjects, and up and down excursions synchronous with the movements of the diaphragm may be noted. The urinary bladder is not visible except when markedly distended well above the pubic crest, or when it is filled with an opaque substance such as is used in pyelography. Considerable information regarding the ureters and kidneys may be obtained by watching the passage of an *x*-ray ureteral catheter under the fluorescent screen. Obstructions, such as calculi or strictures, will be noted by the catheter stopping and bending. The excursions of the kidneys may be noted by watching the catheter tips. If these movements coincide with the excursions of the liver, kidney adhesions may be ruled out. This would negative almost any inflammatory kidney process, as such process is usually accompanied by peri-renal adhesions. Standing the patient on the feet will show bending of the catheter if the kidney drops.

The female pelvic organs are not visualized by ordinary fluoroscopic methods.

While it is true then that fluoroscopy has but a limited application in the study of the organs just mentioned, yet note must be made of a new fluoroscopic method which promises to greatly increase the value of fluoroscopy in the study of obscure abdominal conditions. This consists in the distending of the peritoneal cavity with oxygen or CO.[2] It throws into relief all the abdominal organs and makes it possible to visualize them, just as the air in the lungs makes the heart and aorta outlines so outstanding.

That part of the abdominal field which best lends itself to study by fluoroscopic methods is the gastro intestinal tract, with the closely allied organ, the gall bladder. As the result of some five years' work, in which the number of the fluoroscopic studies of the gastro intestinal tract has run up into the tens of thousands, the writer has no hesitation in stating in the most emphatic way that examination of the gastro intestinal tract by the fluoroscope is absolutely indispensable. And this is not alone the writer's opinion, but it is the expressed conviction of all who have had much experience with this diagnostic method.

Further, this fluoroscopic study of the alimentary canal, which should not be restricted to those patients who have abdominal symptoms, should be used in every chronic condition which might be the result of toxic absorption from some focus of infection. There are no foci more potent in the causation of general toxæmia than those found in a chronically diseased gall bladder or appendix, or in a banded colon. Only recently a patient with a clinical diagnosis of pernicious anæmia, and without one gastric symptom or physical sign of abdominal disease, was found to have a large inoperable carcinoma of the stomach. The correct diagnosis would have been difficult, if not improbable, without the *x*-ray examination. Chronic headaches and backaches, so-called rheumatism, loss of strength and weight, cannot be correctly diagnosed until after *x*-ray examination of the digestive tract for possible foci of toxic absorption.

Another thing that should be stated with all the emphasis possible is that every *x*-ray study of the gastro intestinal tract should extend itself to every part of that tract. For example, there could be no greater mistake than for a physician to send a patient complaining of stomach symptoms to the *x*-ray man for the examination of the "stomach" only. In the great majority of cases stomach symptoms are not dependent upon stomach lesions, but upon disease in other organs, chiefly the gall bladder and appendix. Every gastro intestinal examination should follow the opaque meal from the œsophagus to the rectum, and should be completed by an examination of the colon by the opaque enema. This will take about four days. But nothing short of the expenditure of this amount of time and energy and money will furnish complete information, and incomplete information with resulting mistakes in diagnosis may cost the physician and the patient more than a dozen complete examinations.

The technique, as practised in our clinic, for the complete examination, and the information looked for at each stage, are about as follows:

At 9.00 a.m. the patient reports without breakfast. If there is any suspicion of urinary tract or spinal disease, radiographs are made. If there is any suspicion of gall bladder disease, plates should be made of the gall bladder region. A fluoroscopic examination is made of the chest. The opaque meal is given. The œsophagus and then the stomach are inspected during its ingestion. Irregularity of the œsophagus and cardiospasm are looked for. The manner in which the stomach fills is often very instructive. In the atonic

stomach the meal will sink to the bottom at once and cause such a stomach to sag like a rubber bag. In the normal stomach the column of barium mixture will be held up by the tonic contraction of the musculature and all will fill gradually and evenly. In the stomach which is spastic and irritated from some disease condition, either intrinsic or referred, the musculature will be seen to contract in segments so that when the first half-glass is swallowed it will look much like a rope tied into a succession of knots. It is therefore in order to look for the causes, intrinsic or extrinsic, producing this irritation. When the two glasses constituting the opaque meal are taken, the stomach is inspected for the niche, and the incisura caused by ulcer, the accessory pocket caused by an ulcer that has perforated and the defect of filling caused by malignancy. The size, position, shape, tone of the stomach, and the character of the peristaltic waves are noted. Palpation is done to determine mobility, and to detect any tender area. In about 90 per cent. of gastric ulcers there should be suggestive evidence, which when taken with the clinical and laboratory findings would lead to the diagnosis. In the great majority of such cases the *x*-ray evidence is conclusive. Posterior gastric ulcers usually cannot be visualized, but may be inferred from the combination of increased peristalsis, localized tender area, with visible dilatation of the second part of the duodenum caused by constriction or spasticity of the third part, as it passes behind the stomach at the ulcer site.

Filling defects of the stomach are nearly always due to carcinoma. Unfortunately there is little difficulty in recognizing them, for the carcinoma of the stomach does not usually give rise to serious gastric symptoms until it is advanced sufficiently to show a very obvious filling defect. The exceptions are the carcinomata at the pylorus. They may cause symptoms comparatively early, so that when there is suspicion of the slightest irregularity of outline or peristaltic wave at the pylorus, a number of plates should be taken for more intensive study. Any carcinoma capable of being recognized by the surgeon at operation, should be capable of demonstration by the *x*-ray. Rarely filling defects may be due to inflammatory adhesions from disease of adjacent viscera.

A word may be said about the ptosed stomach. It is one of the triumphs of *x*-ray that it has demonstrated the fallacy of the old text-book pictures of the stomach. There is no set shape or position for this organ. An individual's stomach adapts itself to the body profile. Our stomachs are capable of as many physiological variations as are the noses on our faces. The stout individual has a transverse stomach well above the umbilicus; the thin individual has a vertical stomach reaching normally even to four or five inches below the umbilicus. Between these extremes are all gradations. The only tests of the physiological position of the stomach are its ability to function properly, and its freedom from the production of reflex nerve symptoms by dragging on its nerve supply. The test for the former is its ability to empty the meal on time; the test for the latter, when it is suspected, is the therapeutic one, support.

Passing from the stomach we next examine the duodenum. The first part, the duodenal cap, is the usual site of ulcer. This is recognized by a permanent indentation in one of its borders, which is tender to the touch. A duodenal cap that can even once be filled well and appear perfectly regular, cannot be the site of active ulcer. Duodenal ulcer should be recognized fluoroscopically in nearly every case. Duodenal deformity may, however, result from other causes. There may be the scarring caused by the fibrous contraction of a healed ulcer. In such case pain on pressure is absent. The deformity may be due to adhesions resulting from old ulcer or from inflammatory conditions originating in the gall bladder or colon. In either case there may be uniform deformity of the whole cap, such as a flattening horizontally or vertically. There will usually be fixation in an abnormal position either upward or laterally. Tenderness in the adjoining viscera with absence of tenderness over the duodenum itself will be suggestive. Familiarity with the appearance of the duodenum leads one almost intuitively to differentiate between the acute indentations of ulcer, and the flattened drawn-out appearance of adhesions. Here again the *x*-ray findings must be linked up with the results of the laboratory tests and the study of the clinical history.

Whenever a pathological condition of any kind is even suspected in stomach or duodenum, radiographs should be made for the purpose of more intensive study and of permanent record. Radiographs, without fluoroscopy, are valueless, unless a large enough number are taken, to demonstrate that an apparent deformity is not merely a phase of peristaltic activity.

The demonstration of gall bladder pathology by the *x*-ray has been a subject of much debate. Gall stones, owing to the absence of lime salts in their formation, will show on the radiograph in

only from 10 per cent. to 50 per cent. of the cases where they are present. Some claim to be able to show on the plate the shadow of a diseased gall bladder, whereas it is claimed a normal gall bladder will not show. In our attempts to demonstrate gall bladder conditions we rely more upon the fluoroscopic examinations than upon the plates. As a matter of fact the demonstration of gall stones would not be a matter of first importance if we could show them in 100 per cent. of the cases. In the first place, 10 per cent. of all autopsies show gall stones, but only 10 per cent. of the gall stone carriers have ever suffered from gall stone symptoms. In the second place, biliary stasis and gall bladder infection usually precede gall stone formation. And the important thing is the demonstration of the infective process going on in the gall bladder, which may at any time be galvanized into an acute inflammation by some complicating general or local infection. When palpation in the right hypochondrium, under the margin of the 9th costal cartilage, elicits outspoken tenderness or muscle spasm, one can be fairly sure that he is dealing with gall bladder pathology. When this palpation can be done under the fluorescent screen while the barium-filled stomach and duodenum or colon are differentiated by visualization from the tender area, the localization of the tenderness to the gall bladder can be made with almost absolute certainty. When a first part of the duodenum is seen elongated, flattened out and hitched up and to the right in the gall bladder region or a second part of the duodenum is dilated and over visualized, or an hepatic flexure is seen immobilized in that location, one can definitely diagnose duodenal or colonic adhesions to the gall bladder. When you rule out, as you can, pathology originating in the duodenum or colon, the conclusion is evident that the basal condition is a cholecystitis or a pericholecystitis. In an analysis of the *x*-ray findings in some thirty recent cases, where cholelithotomy or cholecystectomy, or cholecystostomy, had been done, the fluoroscopic report showed tenderness localized to the gall bladder area in practically every case. Where adhesions to duodenum, stomach, or colon were found, fluoroscopy has made the additional showing of spastic duodenal cap, or elongated or flattened and hitched up duodenal cap, or over-visualized second portion of duodenum, or fixation of colon, with corresponding added tenderness on pressure over these abnormal areas.

Five hours after the ingestion of the opaque meal the patient again reports, when observation is made of the amount of barium in the stomach and small bowel. The stomach should be empty and the meal should be massed in the coils of the terminal ileum.

Eight hours after the meal, observation is made of the ileo-cæcal region. The meal should be nearly all out of the ileum, and the meal head somewhere in the transverse colon. Note will be made now of the mobility of the terminal ileum, cæcum, and ascending colon. Frequently the appendix will be filled, and its mobility, position and patency noted. The cæcum will be examined for mobility, fixation, filling defects, size, position and shape. Any tender areas will be definitely localized. Notes will be made and compared with findings of the twenty-four hour and forty-eight hour observations. At these later examinations the progress of the meal will be noted, and any malformation or malplacement of the colon studied, while the entire large bowel will be palpated for tender areas.

Appendicitis, acute or chronic, can readily be recognized whether the appendix has filled or not. Tenderness originating at the ileo-cæcal junction and differentiated from cæcum and ileum by visualization will usually be of appendiceal origin. The line of tenderness may proceed in any direction, as the appendix may run anywhere from the gall bladder to the pelvis. Localized tenderness over the butt of a fixed cæcum may be due either to an inflamed appendix or to an inflammatory constricting band across the cæcum. The latter condition can be differentiated only by the opaque enema.

A barium filled appendix is not to be regarded as pathological unless it is tender, or constricted, or bulbous, or fixed, or remains filled after the cæcum has been emptied of its barium.

After the forty-eight hour observation the patient is given a laxative, preferably castor oil. The following morning the colon is examined by means of the opaque enema. The opaque enema is by all means the most instructive method of fluoroscopic study of the large bowel. The whole large bowel can be filled slowly while under observation. Notation will be made of the calibre of the colon, whether large, atonic, redundant, or spastic. Filling defects (usually indicating carcinoma) and constricting bands, if present, will be observed. Adhesions and tender areas will be determined by palpation. The competency of the ileo-cæcal valve will be noted.

We have reported elsewhere[1] the findings from

the study of one thousand colons by the opaque enema, and can only summarize results here: Out of the thousand colons examined, only 15 per cent. gave normal findings. The ileo-cæcal region gave pathological findings equal in number to all the rest of the colon. Of those pathological conditions in the ileo-cæcal region the most frequent were those causing ileo-cæcal stasis, viz., constricting bands involving either the butt of the cæcum, or the ileo-cæcal region, or the terminal ileum, or all. This banding cannot be demonstrated except by the opaque enema. That these bands were actually present was confirmed by operation, which bore out the *x*-ray finding without exception in one hundred and thirty-five consecutive cases. That their removal is beneficial both from the standpoint of the patient's comfort and the lessening of toxæmia, we have accumulating evidence. That these bands must be carefully distinguished from chronic appendicitis is evidenced by the number we see in patients who come to us with the history of having had the appendix removed with no relief of symptoms, but in whom the subsequent severing of the bands gave complete relief.

Diverticulitis of the colon can rarely be seen under the fluoroscope, but is demonstrated on plates taken any time after the twenty four-hour observation of the opaque meal. Apart from operation it can only be diagnosed by the *x*-ray method.

Mention must be made of another recent diagnostic achievement for which the *x*-ray alone can receive credit, namely, the early diagnosis of tuberculous ulceration of the colon. The diagnosis depends on the discovery that the colon, or that part of it which is the site of tuberculous ulceration (usually the cæcum) will not retain the barium filling which normally should be found there. Archibald[2] in the address on "Surgery," at the Canadian Medical Association meeting, 1920, stated: "With the *x*-rays a very early diagnosis of colonic tubercular ulceration is possible. I think it is not too much to say, that in no other part of the body, in the matter of obscure diseases, have the *x*-rays justified their use so fully."

We have made reference to a new method of fluoroscopic study of the abdominal organs by filling the peritoneal cavity with oxygen. This method originated on the continent of Europe as far back as 1902. The first report of its being used in America for diagnostic purposes was published by Drs. Stewart and Stein, of New York, in July, 1919[3]. Dr. Orndoff, of Chicago, working independently, published reports in September, 1919[4]. Drs. Stewart and Stein say of this new method[5]: "Not only did we find the diaphragm completely separated from the liver and obtain a detail of the liver that had never before seemed possible, but, in addition, we succeeded in actually outlining the spleen with its pedicle, both kidneys, and the uterine appendages. Intraperitoneal adhesions, especially involving the anterior abdominal walls, were easily shown." Dr. Orndoff says: "The procedure of producing pneumo-peritoneum is not difficult. New findings are encountered, which seem to invite the conclusion that the basis for possible new clinical disease entities has been established, and that old disease entities will be relegated to obsolete classifications. Perihepatitis, perisplenitis, and pericolitis with peritoneal adhesions offer new phases for the study of functional pathology of these organs. Post-operative peritoneal adhesions to the anterior abdominal wall may be prevented by keeping the peritoneal cavity distended with oxygen for three to five days, or until the peritoneum is healed."

Dr. Orndoff describes[6] a further innovation which he is using in conjunction with pneumo-peritoneum in the fluoroscopic study of the abdominal organs. When he has inflated the peritoneal cavity with oxygen, he inserts into this distended cavity under fluoroscopic guidance an instrument, which is really a modified cystoscope, and obtains a direct view of the surfaces of the abdominal organs. This method enables him to diagnose by visualization such conditions as tuberculous peritonitis, hæmoperitoneum, extra-uterine pregnancy, pyosalpinx, ovarian cysts, hernia. The procedure he calls "Peritoneoscopy."

We have attempted in a very elementary way to sketch some of the things which fluoroscopy is accomplishing as an aid in the diagnosis of abdominal conditions, and have indicated some of the paths along which further progress will be made. Among the discoveries of the future which will make fluoroscopy still more valuable, we look for the perfecting of an instrument which is even now being used in some *x*-ray laboratories, the stereo-fluoroscope.[7] When this machine is perfected, as it will be in the near future, the fluoroscopic shadows will be seen in perspective, depth will be added to surface shadows. We hope that stereo-fluoroscopy will become as much superior to plain fluoroscopy as stereo-radiography is superior to the flat view of the single radiograph.

In the meantime we believe we have shown that fluoroscopy, as we now practise it, contributes so largely to the sum total of information obtainable regarding abdominal conditions, that we must demand for it a prominent place among our diagnostic procedures. Along the path of visualized study of vital function lies the progress of the future, especially as regards our understanding of the activity of the organs within the abdominal cavity. As Leonard has expressed it:[8] "The living anatomy, physiology, and pathology of the digestive tract has yet to be written, and this can only be done as the results are determined by the study of the living patient by the *x*-ray method."

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HELP

MANY medical students of the senior years, also several 1921 graduates, have made application for appointments during the coming summer.

Graduates:—Available in June for indefinite periods.
Undergraduates:—June till October inclusive.
Locum Tenens:—For whole summer or shorter periods, suggesting One Hundred Dollars per month as remuneration.
Assistants:—Larger number of applicants in this class—more bent upon gaining experience rather than emoluments.

For the convenience of the profession and the students, the office of the Ontario Medical Association situated at 127 Oakwood Ave., Toronto, has undertaken to act as a clearing house. Further particulars will be found elsewhere in this issue. Hospitals requiring internes are also invited to use the service.

The whole plan is an experiment, never having been undertaken previously, so far as can be ascertained. It appears to have particularly appealed to the students. The response from the profession will obviously indicate success or failure of the undertaking.

Case Reports

INTESTINAL OBSTRUCTION FROM GALL STONES

G. H. CLEMENT, M.D.

Vancouver, B.C.

MRS. S., age forty-eight, gave the following history:

On Sunday evening, after eating some nettles, she was taken with severe pain in the abdomen. After heat and hot applications had been applied to the abdomen, she obtained relief. On Monday the cramps continued. On Monday evening the druggist in the town prescribed a purgative, thinking it was a bilious attack. The bowels moved late that evening. On Tuesday, she felt somewhat better, but still had cramplike pains all over the abdomen. No bowel movement. On Wednesday, there was no improvement. Vomiting set in, and continued every two or three hours until late that night, when a doctor was sent for. On Thursday morning, distension was marked, and she was vomiting about every hour. The condition was considered as probably due to a ruptured appendix with general peritonitis, and patient was sent to the hospital.

She had been married for eighteen years, but had had no children. She had had pain occasionally in the upper right side for the last six years, usually at the time of menstruation, and at times had had sharp shooting pains in the region of the liver. She had never been jaundiced. Several times a year she suffered with "bilious attacks".

When the patient arrived at the hospital, her pulse was 132, of poor quality, and was intermittent. The hands and feet were warm. Distention was marked.

Under ether anæsthesia the abdomen was opened by rectus incision below the umbilicus. Free fluid was found in the abdomen; the small bowel was distended, and bluish red in colour; the cæcum and adjoining part of ileum were collapsed. Tracing the small bowel upward, a hard mass was found in the small bowel about two feet from the ileo-cæcal junction. There was marked distention above it. The bowel was incised longitudinally, and a stone removed. The bowel was closed by Czerny-Lambert suture. A mass of adhesions was found in the upper right quadrant around the region of the gall bladder and jejunum. The gall bladder could not be palpated. Further examination was not made on account of the poor condition of patient. 300 c.c. of saline with 10 minims of adrenaline were given subcutaneously during the operation. The patient left the table in fair condition, but did not rally. She died about ten hours after the operation.

The cause of the obstruction was found to be a gall stone one and a quarter inches wide, two and one-eighth inches long facetted on both ends and cylindrical in shape.

This case is reported on account of the comparative rarity of intestinal obstruction from gall stones. Two other cases are reported in the literature. "Impaction of Gall Stone in Small Intestine: Laparatomy: Recovery." Ross, Henry, *B.M.J.*, July 10th, 1909, page 77. "A Diagnostic Talk on Intestinal Obstruction Due to a Large Gall Stone." *Murphy's Clinic*, June, 1915, Vol. iv, No. 3, page 447.

SURGICAL CLINIC OF DR. F. N. G. STARR*

TORONTO GENERAL HOSPITAL

TWO CASES OF CARCINOMA OF THE STOMACH

STAFF:—*Chief*—DR. F. N. G. STARR

Assistants—DR. E. STANLEY RYERSON, DR. JAMES A. ROBERTS, DR. ROSCOE R. GRAHAM, DR. GEORGE E. WILSON

Resident House Surgeon—DR. R. V. B. SHIER *Junior*—DR. A. Y. MCNAIR

CASE No. 1. *Early Scirrhus Carcinoma Causing Pyloric Obstruction—Resection of Stomach—Recovery.* Mr. T. W. H., age sixty-five, referred by Dr. George Young, admitted to Toronto General Hospital March 30th, 1920.

Date and Mode of Onset. This patient enjoyed perfect health up to Christmas, 1919, at which time he began to have slight and indefinite gastric distress. This progressed, until in February he was suffering from continual distention, eructations of food, and was vomiting very foul material. He had a variable appetite. He never noticed that he passed undigested food. On taking food, he had no immediate distress; at times a slight amount of food would even relieve his discomfort. If, however, he attempted to take an ordinary meal, he would have epigastric pain, which would come on from one to three hours after. He states that he has had some difficulty in swallowing. He sleeps well. He does not suffer from headache. His bowels move daily, and he has never noticed the movement to be of an abnormal color, nor has he ever recognized gross blood or mucus. Cardio-vascular system shows nothing abnormal. Blood pressure 150-85. Genito-urinary system shows nothing abnormal. Respiratory system shows nothing abnormal.

Local Conditions. Abdominal examination reveals slight tenderness to the left of the median line. No muscular rigidity; no other masses palpable; no free fluid; liver not enlarged or palpable; spleen not enlarged.

Laboratory Reports. Urinalysis shows nothing abnormal, except questionable trace of bile and a high specific gravity of 1035. *X*-ray Examination: Fluroscopic examination and a short series of plates were made after the ingestion of a barium meal, showing the size, shape and position of the stomach and the passage of food through the tract. Type is hypertonic. Peristalsis is irregular and hypertonic, showing failing compensation. Sphincter is not seen. Caput is not shown. Six hours, 80 per cent. gastric residue, balance small bowel; ten hours, 25 per cent. to 30 per cent. stomach, remainder largely in ileum; trace in cæcum and ascending colon. Twenty-four hours, all in large bowel. Analysis of stomach contents shows the absence of free HCl.

Diagnosis. In view of the fact that this patient had been practically well until three months ago, it would appear unlikely that the pyloric obstruction could be the result of cicatrization following an old gastric ulcer. We know that gastric ulcers can perforate, and that the perforation is the first indication of their presence. Such ulcers, however, belong to the acute type, and are not given to the massive formation of scar tissue. In addition to this, one could make out during the fluroscopic examination, that there was a definite filling defect in the pylorus, with a crater which did not extend beyond the normal line of the lesser curvature. This was due to the fact that the ulcer with the large crater extended from the mucosa outwards, and that the base of the crater was in a plane outside of the stomach outline. In this instance the ulceration seemed to have occurred in a mass which had infiltrated and extended into the lumen previous to ulceration. This is in keeping with the fact that carcinoma in this area arises from glands in the sub-mucous region, and a gross tumor may often be formed before any evidence of ulceration takes place. Thus we feel that this is a case of carcinoma arising in the pylorus, causing pyloric obstruction.

The situation was explained to the patient, but at this time he refused operation. Symptoms continued, and a curious fact was that he gained one pound in weight by March 30th, at which

*From Editorial Board of Ontario.

time he entered hospital. The usual preoperative treatment was carried out. Gastric lavage was done. Simple enematæ were given, and he was prepared for operation.

31-3-23: Operation. Dr. F. N. G. Starr operating. Near mid-line incision right upper abdomen. The cæcum was investigated, and one found a firmly bound down retrocæcal appendix, which showed evidence of old trouble. There was a very extensive adhesion of the terminal ileum deep in the pelvis, which, as it had given no trouble, was left undisturbed. The stomach was explored and a mass the size of a walnut was found in the pylorus, freely moveable and having no abnormal attachments. There were some enlarged glands in the gastro-hepatic omentum, extending up towards the liver fissure. The distal third of the stomach was resected. The jejunem was brought in front of the great omentum and transverse colon, and a point about eighteen inches from its origin was selected for the anastomosis. The jejunem was sewn along the whole distance of the posterior wall of the stomach at the site of section. Serous to serous stitches of chromic catgut were used. The lower two-thirds of the cut end of the stomach was closed by a Connell suture, leaving a small outlet near the lesser curvature, which would simulate the pylorus. The efferent limb of the jejunem left the stomach at the lesser curvature. In this way the food was propelled along the normal course.

Histological Report S-600. Scirrhus carcinoma of the stomach with secondary carcinoma in the lymphatic glands.

Progress. This patient had an unusually uneventful convalescence, leaving the hospital in three weeks, being able to take full diet without any discomfort.

16-12-20. This patient reported to-day, and is in excellent health. He has regained his old weight, and suffers from no abdominal distress.

CASE No. 2. *Colloid Carcinoma of the Stomach —Resection—Recovery.* Mrs. C., age forty-three, referred by Dr. J. Brooke, admitted to Toronto General Hospital November 22nd, 1920.

Complaint. Pain in the epigastrium, radiating to the back; nausea; vomiting of greenish, foul-smelling material; anorexia; loss of weight; constipation; general weakness.

Date and Mode of Onset. This patient has always been of the thin, wiry type, and previous to 1917 enjoyed very good health. At this time she began to suffer from gastric distress, associated with nausea and vomiting. An *x*-ray examination with an opaque meal showed marked ileal retention, and a fixed and tender appendix, also some delay at the junction of the descending and sigmoid colon. A median line lower abdominal laparotomy was done. The *x*-ray findings were confirmed; the appendix was removed, and the obstruction in the ileum and descending colon were found to be due to adhesions of the bloodless type, and probably congenital in origin. Following this she was very well, until August, 1918, at which time she gave birth to a baby. From this date she suffered from a return of symptoms, but was not seen until March, 1920, when she was admitted to the general hospital. An *x*-ray series with barium meal showed a large crater one and one-half inch in diameter, situated in the lesser curvature in the pyloric third of the stomach. *X*-ray diagnosis at this time was that this was due to simple ulcer. A near mid-line laparotomy was done through the upper abdomen. This revealed a mass in the pyloric end of the stomach the size of one's fist—hard, smooth, and on palpating this through the posterior wall of the stomach, one could feel the large crater in the site indicated by the *x*-ray. This mass was adherent to the pancreas, liver and gall bladder, and resection was entirely out of the question. In order to confirm the diagnosis, however, the base of the ulcer was perforated with a cautery, and a piece removed for section. The opening was closed by catgut and omental graft. The histological report on the tissue removed stated that it was a carcinoma, this diagnosis being made by rapid section, a posterior gastroenterostomy was done to relieve the pyloric obstructions. The patient's immediate convalescence was uneventful. In view of the difference of opinion between the *x*-ray examination and the histological findings, this patient was followed by repeated *x*-ray examinations.

X-ray report April 29th, 1920. "There is no roentgen evidence of the pathological condition that was present before operation on the lesser curvature side. The crater of the ulcer has disappeared, induration now gone and pylorus and lesser curvature are showing very good evidence of pliability. At the side of the crater there is a small adhesion. The stoma of enterostomy is working satisfactorily."

July 7th, 1920. "The gastroenterostomy is functioning very satisfactorily and some of the meal is passing by the normal route. The caput is filling fairly well. At the site of the lesion on the lesser curvature there is now evidence of

peristalsis through the whole region. While the peristalsis in this region is hypotonic as compared with the greater curvature, I believe that the hypotonicity is due to scar tissue following the old ulcer and the peristalsis is better than at the examination of two months ago. Beyond the scar tissue towards the pylorus, the pyloric end of the stomach functions very well indeed, and I can see no evidence to make one suspicious of carcinoma. At this examination, I believe the result of the operation is very satisfactory and also am further convinced that this examination adds more evidence in favour of the original diagnosis of ulcer as opposed to carcinoma."

September 27th, 1920. "At this examination the stoma is working satisfactorily, and the pyloric end of the stomach is practically the same as at two and four months after the operation. No evidence yet of carcinoma at the site of old ulcer."

October 25th, 1920. "During the screening at this examination the patient was extremely tender in the upper left quadrant, and on lifting the body of the stomach aside I could see what appeared to be a crater on the posterior wall close to the stoma. A series of plates were done in the oblique directions to show this, and one can see in these plates the gastroenterostomy functioning and just below that there is an area which is extremely suggestive of a new ulcer."

At the time of this last examination, the patient began to have a recurrence of her gastric distress, associated with marked nausea and vomiting. This became progressively worse, and she was admitted to hospital on November 22nd. At this time there was definite tenderness in the upper abdomen, and a palpable mass above the umbilicus, slightly to the right of the middle line. In view of the foregoing reports, it was thought that the *x*-ray evidence pointed to the formation of a new ulcer, and the clinical signs led one to believe that this was attempting to perforate, and that this explained the amount of induration associated with the pain and tenderness. It was considered advisable to explore this region.

Operation 26-11-20. Dr. Roscoe R. Graham operating. The abdomen was opened through the former incision and a large mass was found in the posterior wall of the stomach, very hard, nodular, irregular and adherent to the pancreas. The former anastomosis looked very well. Clinically the tumor mass felt as if it must be malignant. The liver showed no evidence of secondaries, nor were the glands enlarged. However, in view of the former findings, it was considered advisable to resect. There were some adhesions to the liver, which were freed; the duodenum was separated, cut across the distal end and closed by double purse string. The site of the former anastomosis was freed and a crushing clamp placed longitudinally in the jejumum and the anastomosis separated. The stomach was then cut across about its middle between two pairs of crushing clamps. The anastomosis was then separated from the posterior layer of the lesser sac and the middle colic artery was left uninjured. The mass was excised, it being necessary to take a small portion of the anterior surface of the pancreas. The jejunem was then pulled through the transverse mesocolon, held in a limb of a Roosevelt clamp, the cut end of the stomach being placed in the other limb of the Roosevelt, and the crushing clamps removed. It was with difficulty that the first serous layer was put in, because of the tendency of the lesser curvature of the stomach to retract. The anastomosis between the jejunem and the stomach was completed in the usual way, the efferent limb of the jejunem leaving the lesser curvature. The opening in the transverse mesocolon was sutured to what remained of the stomach, so that the anastomosis all lay below this structure. There was a good opening from both limbs communicating with the stomach. By placing the mesocolon in this situation, it was hoped to avoid kinking of the distal loop, thus preventing obstructive symptoms. The abdomen was closed without drainage.

Description of Gross Specimen. A portion of the stomach, the pyloric ring and part of the duodenum. About the pylorus is a large thickened ulcerated area about three inches in diameter, which completely encircles the stomach at this area. The base is very much thickened, and firm in consistency. The edges are slightly heaped up and of firm consistency. At the margin of this ulcer is an old gastroenterostomy opening. About this opening there is another small nodule about the size of a hazel-nut, which is very firm. The tumor on section has a greyish, translucent color.

Microscopic Findings: S–2277. The epithelial cells are growing down into sub-mucosa and muscle layer in small masses, with a great deal of colloid material about them. A few mitotic figures were found.

Diagnosis. Colloid carcinoma.

Progress. The immediate convalescence of this patient has been practically uneventful. There

was some nausea for forty-eight hours, but no elevation of temperature, and the wound has healed by primary union.

16-12-20. The patient to-day is out of bed, and is taking considerable nourishment, largely soft solids, with some meat, and is feeling and looking very well, with no pain or distress in the epigastrium.

Comment. All surgeons who have to deal with a large number of gastric carcinomas have recognized the disparity of the gross lesion in the stomach with the clinical symptoms and the physical signs. As a result of this, we have come to realize that gastric carcinoma may give no warning of its presence until it produces mechanical interference with gastric function. This fact accounts for the large number of hopelessly inoperable gastric carcinomas which one meets in regions other than the pylorus; at times one finds a small, easily removable, primary carcinoma of the pylorus, in which the liver is studded with secondary growths. Opposed to this, one often finds a hopelessly inoperable primary carcinoma, with no secondaries in the liver. The explanation of these two widely divergent pathological pictures appears to lie in the type of carcinoma with which one has to deal.

It is interesting to note, in connection with the operable primary growth with secondaries in the liver, that Rutherford Morrison, of Newcastle, resected such a pylorus, the patient going on to an uneventful convalescence, and continuing perfectly well for fifteen months, when she died of a rapidly-developing portal obstruction. In the presence of such a lesion, however, we have been content simply to do a posterior gastroenterostomy. It has seemed that the results of such procedure have been as satisfactory as could be hoped for, in view of the wide dissemination of the disease. Case 2 has been a source of great interest to us, inasmuch as it has given new hope in cases, in which on investigation one finds the primary growth forbids resection, because of its infiltration, despite the fact that there is no gross evidence of metastasis. Such was the condition found at the primary operation for stomach lesion. The infiltration around the pylorus was so extensive that the mass was absolutely fixed, and no surgeon, even with unbounded enthusiasm, would attempt its removal. At the second operation, however, the mass itself was readily resectable, the technical difficulty was in this that the stoma of the gastroenterostomy was so placed that, in order to offer a hope of cure, it would have to be removed before a sufficient area of stomach could be resected.

The question no doubt arises: "Why was operation delayed for such a time, in view of the microscopic diagnosis of carcinoma, made at the time of operation, coupled with the fact that subsequent *x*-ray examination would lead one to believe that the area was removable at a much earlier date?" This can be answered in part by asking a further question: "Is microscopic examination, by a competent pathologist, always infallible in differentiating between chronic ulcer and early carcinoma of the stomach?" In this connection, Ewing, in his work on Neoplasms, lays emphasis on the fact that there is a type of ulcer associated with chronic inflammatory overgrowth and heterotopia of gland tissue, in which, without clinical history, is almost impossible of differentiation from carcinoma. He also suggests that the misinterpretation of this histological picture explains the high incidence of carcinoma following ulcer, as reported by McCarty and Wilson, of the Mayo Clinic. The delay in operation is further explained by the fact that repeated *x*-ray examinations with the opaque meal and stereo plates, made by Dr. W. H. Dickson, showed that the deformity of the stomach was rapidly disappearing. Two months prior to the last admission, peristaltic waves were seen to travel along the lesser curvature, traversing the area which formerly was represented by the crater of an ulcer. This led us to believe that we were dealing with one of the irregular inflammatory indurations associated with ulcer, and that to advise further operative interference would be unjustifiable.

This, however, proved to be erroneous. It is comforting to note, however, that *x*-ray examination just previous to operation showed changes compatible with the altered clinical picture, which were confirmed by the gross pathology demonstrated at the time of operation.

The question which one has to settle is: "Have we evidence which will prove or disprove that this did or did not arise secondarily to a simple ulcer?" We feel that in view of the fact that the gross specimen shows such a diffuse involvement, extending uniformly throughout the whole area, that it is extremely unlikely that this did arise from a simple ulcer. The original picture must then have been the result of an effort on the part of the growth to perforate all coats of the stomach wall, and the cautery perforation was a real factor in retarding this. The greatest encouragement gained from this case is the fact that a locally

inoperable carcinoma of the pylorus should become operable and remain so eight months, without the development of gross metastases. The explanation of this would appear to be that the great bulk of the tumor was due to an inflammatory reaction, the result of attempted perforation. This experience will serve to stimulate the close observation of such patients after one has been forced to do a palliative gastroenterostomy, instead of a radical resection. The greatest factor in determining whether such a growth will become operable or not will be serial *x*-ray plates, made after a barium meal. Where one can hope for a regression of the tumor mass, we shall in future do an anterior gastroenterostomy in preference to the posterior operation, because of the fact that should resection become possible, one can continuously visualize the anastomosis and thus render the technical difficulties much less formidable.

The striking feature in Case 1 is primarily that there were symptoms at all, and secondarily that they were of such short duration. This bears out our contention that the symptoms are the result of mechanical interference with function, for in this case the growth had produced a degree of pyloric obstruction. Because of our limited facilities in the past, we have been unable to diagnose early carcinoma of the stomach in a large percetage of patients suffering from this disease. As a result, many still visualize a patient suffering from gastric carcinoma as one who is anæmic, much under weight, with intractable stomach symptoms. We must disabuse our minds of the idea of any clinical picture being peculiar to gastric cancer, and indeed must remember that if we are to offer our patients hope from surgical therapy in carcinoma involving any region, our diagnosis must antedate any grave or marked constitutional disturbances.

In obtainihg an early diagnosis of gastric lesions, we feel that the *x*-ray examination with an opaque meal and serial plates is of inestimable value. We are also convinced of the futility of attempting to arrive at any conclusion based on an *x*-ray picture taken with a single plate. Dr. Dickson, who has charge of the gastrointestinal department of the *x*-ray, has thoroughly convinced us of the absolute necessity of serial plates, not only for the identification of pathological conditions, but in order to avoid interpreting normal stomach activity as an abnormality. It has been our misfortune in the last few months to have to undo two gastroenterostomies done for supposed pyloric obstruction; the diagnosis of these cases based on the *x*-ray evidence of a single plate, the obstruction was merely spasm.

In Case No. 2 it will be noticed that the chemical analysis of the gastric contents withdrawn after a standard test meal, showed the absence of free hydrochloric acid. Formerly this fact was considered to be of real value in differentiating between carcinoma and ulcer. At present it appears to be of value only in those questionable instances of a carcinoma developing from an old ulcer? Here one finds that hydrochloric acid is present very often where carcinoma has such a genesis. We well know that the absence of HCl in gastric contents is found in many instances where the gastric symptoms are secondary to chronic gall bladder disease.

The absence of hydrochloric acid in the content of stomachs containing carcinoma is probably explained by the alteration in the gastric mucous membrane. Ewing states "The condition of the gastric mucosa varies widely, depending upon the type and progress of the tumor, as well as upon the previous condition of the mucous membrane. There is a constant tendency toward diminished functional capacity, associated with atrophy of the peptic cells and a metaplastic transformation of gastric into an intestinal type of cell lining, with a marked increase in goblet cells. An increased secretion of alkaline mucus tends to neutralize the acid. This change begins in the pyloric region, and may become very marked, simulating heterotopia of duodenal glands. Observing it in a marked degree, Gosset and Masson were led to believe that all pyloric cancers might be derived from heterotopic duodenal glands."

A point in regard to the technique of the operation is the direction of flow from the stomach along normal physiological channels. It will be noted that in both these cases an attempt was made to have the efflux into the jejunem arise at the lesser curvature. In Case No. 2, the efferent loop of the jejunem leaves the stomach from the lesser curvature. In Case No. 1, the open end of the stomach was closed for the lower two-thirds, and the opening left at the lesser curvature. We believe that this is very important. In some of the earlier resections in which the jejunem was anastomosed to the whole width of the resected stomach, there followed an unusual amount of post-operative nausea, requiring repeated gastric lavage for periods varying from twenty-four to seventy-two hours. Since diminishing the size of the stoma and placing the outlet at the lesser

curvature, simulating the pylorus, the post-operative nausea has been markedly lessened, and one is thus saving his patient from a very devitalizing condition in the early hours of convalescence, a time at which he needs all his reserve. This factor has a marked influence on post-operative storms, and materially lessens the mortality. It has not been considered advisable to bring the jejunal loop through the gastro-colic mesentery because of the possibility of obstruction at this point. A long loop carried in front of the great omentum and transverse colon, in the manner in which one does an ordinary anterior gastroenterostomy seems to be much safer. A point is selected at least eighteen inches from the duodenum, and directly anastomosed to the open end of the stomach, after the method advised by Balfour. Such a procedure is much less time-consuming than closure of the open end of the stomach, followed by the regular posterior gastroenterostomy. The functional results of such an operation appear to leave nothing to be desired.

Conclusions

1. An inoperable primary carcinoma of the stomach may become operable following a simple palliative gastroenterostomy.

2. In a locally inoperable carcinoma of the pylorus, with no metastases, an anterior gastroenterostomy is preferable to the posterior, in view of the possibility of a subsequent resection being possible.

3. All palliative gastroenterostomies should be followed by *x*-ray examination.

4. In placing the anastomosis, following stomach resection, care should be taken to have the efflux leave the stomach and enter the jejunem at the lesser curvature, as this markedly decreases post-operative nausea.

5. The hope of increased operability and prolongation of life lies in early diagnosis. This should mean that all patients suffering from chronic gastric distress, should be examined by means of *x*-ray after an opaque meal. Serial plates should be made to avoid errors in diagnosis resulting from the use of a single plate. In addition, it is extremely important to have the plates interpreted by one who is thoroughly conversant with gastro-intestinal roentgenology.

Case Report. *Septicæmia.* Mrs. W. L., age fifty-five, widow.

On Wednesday morning, November 24th, 1920, the patient received a rather insignificant cut on the left index finger. The next day the finger was swollen, and in a few hours the swelling extended as far as the wrist. On the third day the whole hand was involved and red streaks were noticed running up towards the axilla. A doctor was called in and hot fomentations were applied. The following day the patient was worse, and she was ordered to hospital, being admitted on the afternoon of Sunday, November 28th.

On admission the temperature was 101°, pulse 112, and respirations 22. On the dorsi-lateral surface of the base of the terminal phalanx of the left index finger was a transverse cut about half-an-inch in length, which did not appear to go down as far as the bone. The edges of the cut were unhealthy and had a greyish sloughy appearance. The fingers and thumb were swollen to about double their size, except the terminal phalanges which were not much enlarged. On the dorsum of the hand was a large blister containing turbid serum. The forearm was only moderately swollen, dusky in appearance, with here and there evidence of blood having been extravasated. On the inner side of the elbow joint was a large blister containing blood-stained fluid. The upper arm appeared normal and there was no evidence of any red streaks. Movement of the elbow was unimpared, but the patient was unable to flex or extend the fingers or move the wrist Over the dorsal surface of the forearm pseudo fluctuation was easily obtainable and without causing any apparent pain. The leucocyte count was 22,000.

The tongue was coated and exceedingly dry. The appetite was poor and there has been some nausea and vomiting with pain in the epigastrium after taking food. She was very thirsty. *For the last seven years she has suffered from diabetes,* with urinary frequency and some pain. The urine contained albumen, pus, and sugar in moderate amount.

The arm was placed every alternate hour in a hot bath of saline and the ordinary general treatment adopted.

The next day the temperature was $99\frac{2}{5}°$, pulse 90, and white blood count 21,400, and the condition of the arm about the same. On the following day, November 30th, being the sixth day of her illness, the temperature was 99°, pulse 90, and white blood count 15,200. Her mouth at this time was so dry that speech was difficult, in spite of every effort to increase the amount of fluids. Fluctuation could be made out on the dorsum of the hand, so it was decided to incise it.

Operation. Dr. George E. Wilson. Under gas and oxygen, incisions were made into the dorsum of the hand and about a quarter of an ounce of thin, grayish pus evacuated. About a drachm was likewise obtained from an incision on the dorsum of the forearm two inches from the wrist. Near the elbow on the same surface another incision was made, from which a small amount of serum exuded. Here the fat was of a grayish color, with here and there small yellowish areas. From each incision smears and cultures were made, and a pure culture of streptococcus hæmolyticus obtained in each instance.

The smear from the highest incision showed hundreds of short chained cocci to a field and, except for a few polymorphonuclear leucocytes, closely resembled a smear taken from a culture tube in the laboratory, so numerous were the organisms.

About four hours after the operation, the respirations began to go up and there was some dirty brown sputum, and she began to sink rapidly and died about midnight.

The autopsy was performed ten hours after death. An examination of the arm showed that the inflammation had extended to the tendons on the dorsum of the hand, which were bathed in a small amount of purtulen exudate. A dissection of the axilla revealed no abnormality whatsoever, and in the fat the glands were hard to find. On histological study, the only change observed was an increase of the endothelial cells. The lungs showed an acute bronchitis with double bronchopneumonia. The kidneys presented the appearance of acute nephrosis and there were petechial subpericardial hæmorrhages. From the heart-blood a pure culture of a virulent hæmolytic streptococcus was obtained.

There are several interesting features in this case. It was noted that the forearm was not tender to palpation and at a time when there were myriads of very virulent streptococci in the subcutaneous tissues. This was due in all probability to the destructive action of the toxin upon the pain nerve endings. Then there was the absence of any gross changes in the axilla and absence of inflammation in the glands, which can only be interpreted as evidence that the bacteria gained access to the blood stream somewhere in the hand and not through the lymph channels. Lastly, the case illustrates the futility in such an instance of obtaining any real benefit from a few incisions into the subcutaneous tissue.

A DISCUSSION OF CASE REPORTS ILLUSTRATING SOME ANOMALIES IN THE TREATMENT OF GASTRIC AND DUODENAL ULCER

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Calgary, Alberta

MRS. V., age fifty-one years, multipara, gives the following history: She has had the usual diseases of childhood but nothing of any importance otherwise. About a year ago she became conscious of a certain amount of discomfort after eating, which later became actual epigastric pain, accompanied by belching and followed by vomiting. For the past month she has felt a "lump in the stomach" after eating, the lump disappearing after vomiting or after rubbing. She has lost weight and is afraid to take food because of the pain which was sure to follow.

Examination of the mouth, thyroid, chest and pelvis is negative. The abdomen reveals nothing but some tenderness over the pyloric region. Immediately following the drinking of a glass of water, however, the stomach is felt and seen as a globular mass in the epigastrium—active peristalsis is noted, accompanied by severe colicky pain. Upon close questioning she admitted that twelve years previously she had had "trouble with her stomach", had vomited frequently and had lost weight. She did not consider the malady of sufficient importance to consult a physician and gradually the condition cleared up with no further symptoms until the beginning of her present illness.

From Editorial Board of Calgary, Alta.

X-ray examination confirmed the diagnosis of pyloric obstruction. Fluoroscopically the stomach is noted as large, with hyperactive peristalsis for a short period followed by a hypotonic condition. Small amounts of the barium meal were seen to pass through the pylorus but no cap could be demonstrated. The radiograms showed a five-hour residue.

Examination of gastric contents—250 c.c. of a yellowish colour were withdrawn containing 15 c.c. of undigested food and some currants which had been eaten the previous evening. Analysis showed a total acidity of 49, free hydrochloric acid 20·5, and no lactic acid. The white blood cell count was 8,500.

Operation disclosed a hypotonic stomach with a mass nearly the size of a small jap orange at the pylorus. This mass was smooth, not adherent and the overlying peritoneum was normal. The pyloric ring would not admit the point of the finger and the condition was very similar to that found in hypertrophic pyloric stenosis in children. No enlarged glands were palpable in the mesentery; the gall bladder and other abdominal organs appeared normal. A posterior gastroenterostomy was done and the patient made an uneventful recovery. She remained in hospital twelve days, since which time she has continued to gain in weight, has absolutely no discomfort or pain and states she never felt better.

I regret that I did not resect a portion of the tissue for microscopical examination but I am of the opinion that the mass is the cicatrix of an old ulcer whose beginning dates back twelve years.

This case demonstrates that ulcers of the stomach and duodenum are healed by nature, even without the aid of the physician. But I am of the opinion that had this patient received proper medical treatment twelve years previously a permanent cure would have resulted without the formation of abundant scar tissue and without stenosis.

Just here I should like to call attention to a few points in the medical treatment of gastric and duodenal ulcers. In the first place, cases of this kind do not usually remain in hospital long enough. Some cases may require months of hospital care. It is not always easy to ensure this, but there is little doubt that by this means many more cases would be cured by medical measures. It is not enough to prescribe an alkaline mixture containing soda bicarbonate for such cases. Repeated gastric analysis should be made, and enough of the proper alkali administered to reduce the acidity or to neutralize it. Latest reports of the action of soda bicarbonate on the stomach are to the effect that it does neutralize the acidity at first, but later causes an increase of the hydrochloric acid, and that the last state may be worse than the first.

Some of the magnesium salts, especially magnesium oxide have a much better action in neutralizing the excessive acidity. Olive oil seems to act as a depressor of the acid forming function, and will be found to be a very valuable help. Of course a proper diet must be prescribed.

An eminent surgeon on being asked when to operate in cases of gastric and duodenal ulcers replied that he often operated after seven distinct medical cures. It is very probable that such statements could not be made, had the medical treatment been more scientific and more persistent.

Only this spring, on my way to Vancouver, I met a young lady who had been operated on for gastric ulcer in a neighbouring city some months previously. Her symptoms had not been relieved, and she had been and was subsisting almost entirely on tea and toast. She had been advised to go to the Coast to see if she would not improve, failing which she was to return and be operated on again. This is perhaps an extreme case, but I mention it here to show how surgeons sometimes overlook the physiology of the stomach and bring discredit on surgery. Too often our surgical patients are dismissed after a gastroenterostomy or whatever operation may have been performed for the relief of gastric or duodenal ulcer, and no further care is taken of them. They are allowed to choose their own diet and mode of living, and the final result is far from satisfactory.

As to the operative treatment of gastric and duodenal ulcers, I think it will be found that most cases of the duodenal variety are entirely relieved by a simple gastroenterostomy. Either anterior or posterior matters little if properly carried out. Care should be taken to see that a diseased appendix or gall bladder is not overlooked. In cases of gastric ulcer many seem to favour removal of the ulcer if not so large as to deform the stomach by its removal, or a partial gastrectomy combined with gastroenterostomy.

It is unfortunately true that there are a certain number of cases of duodenal ulcer, as well as gastric, which do not seem to produce any

subjective symptoms, and the first warning the patient may have is the sudden intense pain and collapse caused by the perforation of the ulcer. It would seem that there are certain "silent areas" in the stomach and duodenum, which, if attacked by ulcer, do not give any warning of their presence. Such a case came to my notice a short time ago.

J. H., plumber, age thirty-two, was at work in the afternoon when he was seized with a severe sickening pain in the epigastrium. He was forced to drive to his home, when hot applications were applied without relief. Three hours after his first pain I was called and found him in a rather shocked state, the abdomen board-like, especially the upper half. He was tender over the whole abdomen, but more especially in the substernal region. He had vomited,—pulse 110, temperature 98°. I could get no history of any previous gastric disturbance except that some two months previously he had felt a little "indigestion" for a day or two which was entirely relieved by a dose of cascara. He was sent to hospital and an immediate operation performed. I found a perforated duodenal ulcer but fortunately very little stomach contents had been extruded. The ulcer was closed, reinforced with omentum and a posterior gastroenterostomy done. An uneventful recovery followed, and so far the patient remains well.

CASE OF LUETIC CIRRHOSIS OF THE LIVER, SUCCESSFULLY TREATED BY ANTI-SYPHILITIC MEASURES AND REPEATED TAPPINGS

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THE patient concerned was a female, age thirty-seven, and a Canadian by birth. She first showed signs of illness in January, 1917, her earliest symptoms being pain in the region of the liver, slight jaundice and vomiting. Her past history was one of continuous poor health, with attacks of migraine, indigestion, sour stomach, and from time to time peripheral neuritis in her feet. She had never been an alcoholic, though from time to time she had taken wines of the so-called tonic variety. Recently she had lost much in flesh, declining from 166 to 117 pounds.

She was seen by me for the first time in April, 1917, about two and a half months after her initial symptoms. She presented the appearance of a debilitated woman, distinctly jaundiced, and her abdomen was distended with fluid. She had already been tapped four times by another physician, who had given her some few injections of mercury. The temperature was 99°, pulse 98. Paracentesis was performed for the fifth time on April 17th, in the usual way, and two quarts of pale, clear, yellow fluid were removed. Small doses (7½ grains) of iodide of potassium, three times daily, were prescribed, which early produced a marked papular eruption.

In consultation with Dr. C. F. Martin, who concurred in the diagnosis of syphilis of the liver, the iodides were increased to 20 grains, three times daily. In view of the recurrence of the acneiform eruption, the medicine was changed to small doses of proto-iodide of mercury, three times a day, and later four times daily.

The fluid in the abdomen returned gradually, and was again removed, and one could feel below the right costal margin the hard edge of the enlarged liver, somewhat nodular in character; there was also a very definite enlargement of the spleen. Shortly afterwards the patient was sent to the Royal Victoria Hospital where the Wassermann test was found positive, and a few injections of salvarsan, followed by injections of salicylate of mercury, were given. Later on the patient was sent back to her home for a continuance of the treatment with potassium iodide and mercury. This was continued for one year, and to-day, some four years since the onset of her treatment, she is apparently quite well and enjoying her ordinary routine of life.

It is interesting to note that the fluid removed from time to time varied much in quantity; at one time ten quarts were removed, at other times less; the amount removed being determined

by the comfort of the patient. It is further of interest to report that no history of lues, or any other of its symptoms, could be obtained from the patient.

Syphilis of the liver in itself, manifested by a generalized cirrhosis, is not a very common condition. Among 2300 autopsies at the Johns Hopkins Hospital, there were forty-seven cases. In nineteen of these there were gummata, in sixteen there were scars, while in twenty-one there was definite cirrhosis. Six of the cases were congenital.

MALIGNANT DISEASE OF THE LUNGS, SECONDARY TO CARCINOMA OF THE PROSTATE. PATIENT IN FAIR HEALTH FOR MONTHS

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THE patient, age sixty-five years, was seen in the out-patient department of the Royal Victoria Hospital complaining of cough, dyspnœa on exertion, and pain across the shoulder. His general health had been fairly good, but for two months past he had suffered somewhat from chronic cough, and increasing dyspnœa on exertion. Pains developed across the upper part of the back, and at the time of his admission were his chief source of distress. They were particularly severe at night but were not aggravated by coughing or deep breathing, and were described as burning in character. The expectoration, which was not copious, was dark in colour and at times blood streaked. There were no chills, fever, or night sweats. The patient's only other complaint was some difficulty and frequency of micturition, but he had no pain or hæmaturia. There was no special loss of strength, though his weight had diminished by ten pounds during recent months.

It was learned that the urinary symptoms had developed during July, 1919, and for this condition he had been admitted to the hospital and was found at that time to have an *inoperable cancer of the prostate.* Suprapubic drainage had been done with relief to the local symptoms, and since that time he has carried on his ordinary routine comfortably enough, till the development of cough and pain in the chest two months ago.

The present examination showed him to be of good nutrition, with normal colour to the mucous membranes, though with a somewhat pasty appearance of the skin; the muscles were soft and flabby. The dyspnœa, cough and expectoration, as above described, were the chief features of the symptomatology, apart from the prostatic condition already mentioned.

The chief interest centres around the condition of his chest. The thorax was of an emphysematous type, and expansion was symmetrical but limited: tactile fremitus was normal. On percussion *irregular areas of impairment* were found over the posterior surface of the lungs, from the fourth to the eighth dorsal vertebræ, most marked on the left side. The breath sounds were generally weakened, but somewhat harsher over the regions dull to percussion, and scattered moist râles were heard at the bases and in the left axilla.

The fluoroscopic examination of the lung and the subsequent stereoscopic plates, showed well defined areas of density in each lung, more especially in the left. These areas presented the usual appearances of a secondary growth, rather than of a tuberculous involvement.

In other respects, the physical examination gave no evidence of disease, and repeated examinations of the sputum has failed to reveal bacilli. There seems to be no reason for doubt as to the nature of these areas in the lungs. It is remarkable that this patient should maintain comparatively good health, notwithstanding the extent of the primary lesion, and a secondary invasion of the thorax. He has been seen repeatedly since leaving the hospital, and while his condition continues to progress unfavourably, he nevertheless is still able to carry on a certain amount of light routine work.

Editorial

ADVANCES IN THE TREATMENT OF HYPERTHYROIDISM

GRAVES' Disease or Hyperthyroidism has presented many problems, the solution of which has demanded the activity of all departments of scientific medicine, and to which each has contributed its quota of valuable information.

The internist has of late years been especially interested in the study and detection of mild grades of the conditions causing more or less pronounced invalidism and simulating other diseases.

The chief problem affecting the surgical treatment has been, however, the development of a pre-operative preparation, an operative technique, and a post-operative care by which the margin of safety to the patient has been progressively increased. Biological chemistry in the study of metabolism now permits empiric experience to be interpreted in terms of scientific exactitude.

In Kocher's epochal work upon goitre we view the efforts of this master surgeon and clinician to discover a safe criterion for operation upon goitre cases associated with hyperthyroidism and the enunciation of definite rules of surgical procedure. Kocher recognized the value of refrigeration; employed exercise as a test of myocardial stability; sought in the differential leucocyte count an index of the gravity of the toxæmia; and resolutely set his face against the use of inhalation anæsthesia. Although the differentiation between cases of Graves' disease and toxic adenoma had not clearly emerged, Kocher further found by experience that the radical operation of that day (lobectomy) could not be undertaken safely as a routine, and advocated vascular ligation, first practised by Wolfler, as a preliminary measure in the more serious cases.

Barker of University College Hospital, London, measurably advanced upon Kocher's cocaine analgesia by using beta eucaine and an improved method of infiltration.

Still the mortality following operation remained high. The severe and often fatal reactions following operation were variously ascribed to (1) nervous shock; (2) compression of the gland during operation; (3) absorption of liberated thyroid secretion from the divided surfaces of the gland; (4) hæmorrhage; and (5) infection. Crile met all these conditions with a technique which eliminated the unexpected, the chief cause of nervous excitation; reduced traumatism to the irreducible minimum; and advocated combined local and gas-oxygen anæsthesia. As a result the mortality figures rapidly declined.

The latest and greatest advance is due to the clinical application of important laboratory discoveries. The names of Lavoisier, Rubner, Benedict, DuBois, and Tissot are closely associated with the development of apparatus and technique for the estimation of the basal metabolic rate in animals and man, and for substantiating what has long been assumed, that the thyroid is the chief regulator of chemical activity with-

in the organism and is responsible for variations in the basal metabolic rate. Kendall's isolation of the active constituent of the thyroid—thyroxin—has placed within our grasp proof of the metabolic function of the thyroid and at the same time the means of demonstrating with mathematical precision the effect of known quantities of thyroxin upon body metabolism.

Thus the advances in technique and improved clinical control have largely eliminated surgical risk, and the future would seem to promise to the public a release from the thraldom of an affection which in the past has been attended with a high death rate and in a still larger proportion of cases has left the individual with an irreparably damaged myocardium.

To properly benefit by these advances in medical knowledge it is essential that patients with hyperthyroidism be carefully segregated and studied apart from the exciting influences of a general hospital ward, and we view with satisfaction the recent action of the management of the Montreal General Hospital in providing such accommodation and installing the apparatus, under the control of a physiological chemist, for the estimation of the metabolic rate.

It is expected that this stimulus will result in the tabulation of information which will be available to our readers in future editions of this JOURNAL.

THOUGHTS ON PROBLEMS ARISING IN CONNECTION WITH THE TREATMENT OF THE INSANE

THE medical profession will easily recognize the advisability of revision and change in the present law as it applies to the question of insanity; more particularly in reference to the ease with which it may be employed by relatives who desire to obtain the freedom of an asylum patient. It is not difficult for any of us to recall instances of patients formally committed to asylums who have been released after a short period of confinement, and have more or less promptly attempted, or even succeeded, in committing some terrible crime, the result of their insane ideas. The history is usually the same. The patient has suffered from a monomania or a paranoiac form of insanity and has improved somewhat under treatment during confinement, although considered by the hospital authorities as by no means cured. The solicitations of relatives who promise to be responsible for the patient secure his release. If this release were not so given, habeas corpus proceedings would very soon secure it. But what to an alienist is a serious and sometimes dangerous symptom, may to the uninitiated appear merely as an idiosyncracy, and thus the relatives' shouldering of responsibility may be no protection to the public. It is not as simple a matter as it might seem to draw up laws which with justice to all would obviate this danger. Where relatives wish to act against the judgment of hospital authorities, the decision of a committee of experts would be more reliable than that of a judge of one of the civil courts.

Our attention has also been drawn to a

change in the law which has recently come into effect in the Province of Quebec, which cannot but be considered as not only undesirable, but even a positive step backward. No individual who is insane can be asked to stand a trial. Formerly, in the Quebec Province, in a criminal case, if any question of the sanity of the prisoner arose the Superintendents of the hospital for the insane, as Government officials, were called in, and after sufficient examination and observation gave their opinion by which the action of the court was guided. But now this is changed, and the Attorney-General has decided that the burden of proof of insanity is on a criminal who pleads that insanity. Thus one can see the possibility in the future of a Thaw trial in this province with all its distasteful revelations and obnoxious publicity—to say nothing of the injustice to a prisoner really suffering from mental disease. Why was the change made? Certainly one would not suggest that the Superintendents of our asylums were lacking in experience, and, being paid by the Province, they would surely be more likely to be unbiased. These points, I believe, were not questioned, but I am informed that these men sometimes made as much as $1,000 a year above their salary in this sort of work, and it is thought to be too much. We advocate economy, but the salaries of the Superintendents of Asylums are not so generous that an extra $1,000 or $2,000 should be weighed against the huge expense to the Province, and the undesirable notoriety of a local Thaw trial.

HYDROCEPHALUS

THE layman can diagnose "water on the brain"; and Hippocrates, who tapped the ventricles, could do about as much towards its cure as the most learned among his children in Science have been able to accomplish through all these centuries, up to the last two or three years, Hydrocephalus in infants has always been considered a fatal disease, with very few exceptions; and that conception is still not far wrong. It has demanded courage on the part of surgeons to undertake its treatment; the courage that one needs when treading unfamiliar and dangerous paths in the dark. But the adventure has been justified by the hopelessness of any other, non-surgical, plan of action. Much light has been needed; and now, in this last decade or two, light is being brought. Nearly thirty years ago Key and Retzius demonstrated the final step in the circulation of the cerebro-spinal fluid, its absorption into the veins of the pia-arachnoid and the longitudinal sinus. Leonard Hill, Cushing and others have confirmed this; and Weed, in Cushing's laboratory, has largely amplified our knowledge of this subject. It remained, however, for Dandy of Johns Hopkins to clear up a great deal that was still obscure and to apply the knowledge to practical use, so that within the last two or three years we have come to entertain new and not small hopes of being able to cure by operation many of the cases of hydrocephalus that have in the past been considered hopeless. Dandy's papers have been appearing at intervals since

1913. His work up to a year ago was reviewed in these columns a few months since and needs no repetition here. That work may be summarized in his own words: "Every case of hydrocephalus has a specific cause which can and should be located by clinical tests during life In a great many instances this cause is easy of correction by operation, with the resultant cure of the disease." In a recent paper* he describes a certain group of cases of hydrocephalus caused by closure of the foramina of Luschka and Magendie, a sub-division of the general group of non-communicating hydrocephalus. Of course, cases of this character have long been recognized as due to inflammatory adhesions at the base following a meningitis. Dandy's observations, however, bring these into a definite class by themselves, which in many instances can be diagnosed by his methods of injection of air and of a dye into the ventricles or the spinal space. He points out that there are apparently two types of occlusion of the foramina of Luschka and Magendie. One occurs congenitally and is well advanced at birth, while the second, which occurs at any age, always follows some form of meningitis. There are no clinical features which permit one to make an absolute diagnosis. On the other hand, the lesion, having been determined by ventriculography and by the phenolsulphonephthalein test, can always be found at operation. In the congenital case there are frequently no evidences of fœtal meningitis in the shape of adhesions, and in such cases Dandy believes that hydrocephalus results from the failure of the foramina to develop, rather than from a secondary closure after their development He reports a series of some nine cases, the details of which must be read in the original.

He goes on to present an operative method for the formation of a new foramen of Magendie. This consists briefly in the very simple procedure of cutting a hole in the much dilated coverings of the fourth ventricle. In one case, a boy of nineteen, the result was extraordinarily good. The symptoms, which had been severe, disappeared, and the boy was able to return to school life. In another case, an infant of three months with extreme dilatation, puncture of the ventricle quickly resulted in death. And in a third case, an adult, to construct a new foramen, it was necessary to excise a large scar at the foramen of Magendie. The patient recovered, but in Dandy's opinion recurrence remains a possibility. In the successful case, the restoration of the paths of absorption over the cortex was demonstrated by the injection of air into the ventricles.

Thus we see, as indeed so often before in medical history, that the things regarded as hopeless by one generation become the hopeful things of the succeeding generation; single-eyed pursuit of knowledge, even in the most unpromising fields, will usually bring its due reward.

*The Diagnosis and Treatment of Hydrocephalus due to Occlusions of the foramina of Magendie and Luschka. *Surgery, Gynæcology and Obstetrics*, Feb., 1921, p. 112.

Correspondence

The Acute Abdomen

To the Editor,—

I AM personally much pleased to notice at page 140 of your February issue, an editorial half apology and half protest for the frequent recurrence in that number of the terminal abomination, "Acute Abdomen," although carefully written, as you suggest, within "quotation marks". Your apology for your correspondents is that "they are forced to use it because it is convenient, and very expressive," and with this statement I ask leave to join issue.

"On what compulsion *must* they (I)? Tell me that." You allege it is "convenient". Now, what is the innate sense of "convenience"? The N. E. D. gives it as coming from the Latin *convenientia*, meeting together, agreement, accord, harmony, conformity, suitableness, fitness; and defines it in English under several heads, such as agreement, congruity fitness, aptitude, moral or ethical fitness, propriety, suitable, well adapted, ease or absence of trouble in use or action, material advantage or absence of disadvantage, saving trouble, opportunity, etc. Will any serious-minded person, then, admit the "convenience" of this travesty as a laudable expression Will not, rather, such a one "condemn" it as totally unfit and unbecoming? Appleton's Medical Dictionary (1915) scorns to mention it, and it is not to be found in the indexes of several works on surgery hastily consulted. I am quite aware that it is English in its origin (and I was greatly astonished at the Englishman who introduced it); but is it English in any other sense? But, again, you say it is "very expressive", and here, I suppose, it will be contended that its association with "Abdomen", which hides or conceals its contents (*abdere*) makes it "fit" to express a "hidden" meaning. But what does the term "acute" openly express? Here, again, N. E. D. affirms: Sharpness, pointedness (*i.e.*, having the form or qualities of a needle), penetrating, pungent, sharp, clever, as applied to diseases (not anatomical parts), coming sharply to a point or crisis, not chronic.

What picture does the expression "Acute Abdomen" conjure before the eye? The only one that I can think of is an internal abscess pointing at the umbilicus. By a stretching of language, or using the word in the sense of an acute angle, as applied to a ridge, one may, possibly, think of a scaphoid or a carinate abdomen, which surely here does not fit the case.

Apologizing for my prolixity, let me say, in conclusion, that I hold it to be the province and the proud privilege of the Medical Press to preserve the purity, the propriety and the integrity of Medical Speech. "*Hinc illæ lacrymæ*". As a *reductio ad absurdum* give me leave to add (*Verbum non amplius addam*): The *lingua Franca* term "Acute Abdomen" may be said to be the *facies Hippocratica* of our *English tongue. Proh: pudor!* Put it out at once and for all; and let it be seen no more, nor its *nigrities* offend again!

Yours truly,

I. H. CAMERON

Toronto, February 23rd, 1921.

Peccavimus

MR. CAMERON'S letter of protest, which appears above, has been forwarded to me, with the suggestion that I, as being responsible for the original editorial, should write a reply.

Mr. Cameron is one of few on this side of the water whose life-long study of surgery has not impeded a life-long study of the classics. And your student of the classics is always a student of the best in English literature. Such an one, with this double fired devotion, will always be found to be an ardent defender of "the purity, the propriety, and the integrity" (three most felicitous words!) of our English speech. And such an one is Mr. Cameron, a man *integer vitæ scelerisque purus*. Our ordinary minds constantly run from the general to the particular. *Purus!*—not only of crime in general, but in particular of the crime of mishandling our good English prose, such as the finer minds of the past have made and moulded it. He is right. Let no contributor, henceforth, approach us with the hideous ellipse "acute abdomen" on his lips, or rather on his pen. We shall metaphorically administer to him, should he hazard it,

such a *coup de pied* on his forward parts as will incontinently make him retreat, bearing with him an acute condition inside his abdomen. A similar reception awaits those who desire to "stress" a point, or "sense' a fact, or "vision" an idea. Mr. Cameron is right. *Peccavimus!* We ought not to have let the phrase pass, even in quotation marks. No plea of "common usage" shall be urged to justify it. "Common usage" has had over ten centuries in which to mould our language, and has got across (oh, the frailty of the most willing disciple—"got across' many a monstrosity. But common usage can be allowed no more latitude; else we shall be told that Julius Cæsar was carried off by an "acute thorax" (traumatic); or that Sisera lost his life through an "acute cranium" (likewise traumatic); or that a combination of "acute abdomen" (epigastric) and "acute lower jaw" cost Jess Willard the championship.

Our speech needs no further enrichment; neither shall any be allowed to clip it. "Acute abdomen" is an ugly clipped thing. Mr. Cameron, once more, is right But will he please give us a short and sweet smelling substitute for the phrase that we both condemn?

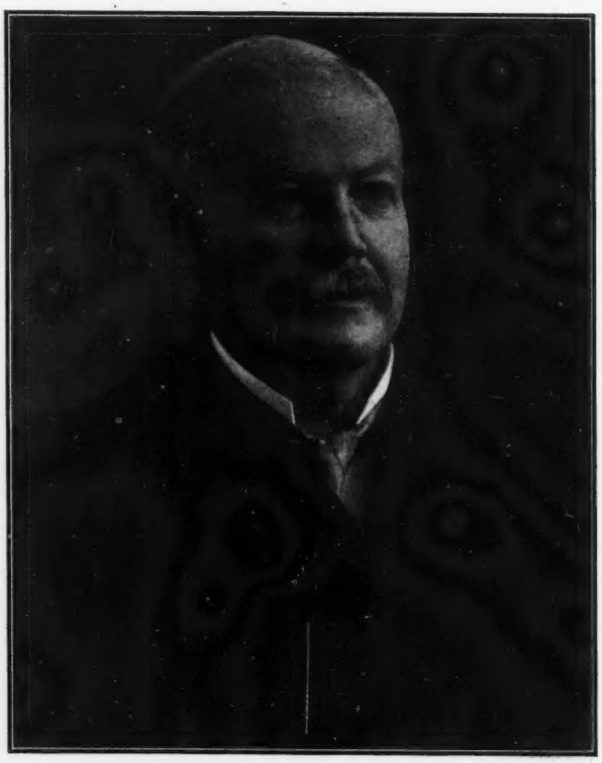
E. W. ARCHIBALD.

Montreal, March 10th, 1921.

Obituary

HUGH A. McCALLUM, M.B., M.D., M.R.C.S., L.C.D.

IN the passing of Hugh A. McCallum the profession of medicine has lost a far-seeing and deep-thinking member and the Canadian Medical Association an active and devoted promoter of her interests. Born in 1860, his early life was spent on the farm as was that of so many others of the most capable members of the profession. After teaching a year or two, he entered the Western Medical School of London in 1883, from which he was graduated as gold medalist in 1886; he obtained the degree of M.B. at the University of Toronto the same year. He settled at once in London as a practitioner, and next year was appointed Lecturer in Physiology in the Western Medical School. Later he went to Johns Hopkins for study in physiology and in 1889 was appointed Professor, filling this position until 1898. Transferring his activities to clinical medicine, he spent 1900 in London, Eng., for clinical work, obtaining the qualification of the M.R.C.P. and the M.R.C.S. at the London Colleges. He became Professor of Medicine in 1909. During these years he took courses in clinical medicine from time to time at the Johns Hopkins and the New York Hospitals. He was appointed Dean in 1913 which he held till 1919, then becoming a member of the Board of Governors of the Western University, retaining it until his death. During all these years he was very active in improving the status of the School. He accepted the position of Dean that he might the more effectively promote these aims, especially in securing whole time professors in the preliminary subjects, and was successful in attaining his object. Perhaps his greatest work was in securing from the Government the establishment of an Institute of Hygiene, the first of the kind in America. He was President of the Canadian



DR. HUGH A. MCCALLUM
Late of London, Ontario

Medical Association at its meeting in London and proved a most capable officer.

He possessed the faculty of teaching in a high degree and by his intense earnestness and optimism imbued both staff and students with his own high ideals. He lived to see a fine large medical building built, the hospital much enlarged and improved, and a large hospital for children under construction, work largely due to his initiative and enthusiasm, an achievement creditable to any man.

He won distinction not only as a physician of rare attainments, but also as a man of strong character and broad culture and deep sympathy. He soon made his way to a leading place in the community and took a keen interest in all movements for the public good.

One of his closest friends early in his career and one who influenced him most along a certain course, was the late Dr. Maurice Bucke, who was Superintendent of the Hospital for Mental Disease, a thinker of rare power of penetration and a great admirer and friend of Walt Whitman, whose poetry exercised a strong influence on McCallum's life. As one of his friends writes, "Dr. McCallum was religious down to the core." He agreed with Walt Whitman that "no man was ever half religious enough." His death occurred on January 25th after three days' illness from acute pneumonic fever. Thus passes in the zenith of his career a man of rare character and usefulness.

DR. GEORGE MURRAY CAMPBELL

Dr. George Murray Campbell was born at Truro, N.S., on June 8th, 1861, a son of Mr. Duncan Campbell. The family traced its descent from the Campbells of Argyle. After passing through the Truro Academy he entered the University of Dalhousie in the session of 1878–9. His university career was one of unusual distinction. He had entered with a Professors' Scholarship, and he was awarded prizes in Mathematics, Classics and Metaphysics. and the bursary of the North British Society, and he graduated B.A. in 1882 with honours in Mathematics and Physics, the University prize in Astronomy and the Sir William Young Gold Medal. He was very popular with the students of all years, took a leading part in student affairs, and was prominent in athletics.

He then went to Johns Hopkins University where he continued his studies in Mathematics, and in Astronomy under the late Professor Newcomb. To the last he kept up his interest in Astronomy in all its aspects. At this time it appeared that his love and aptitude for pure science would determine his career, but he decided to study medicine, and after some time spent at McGill he went to New York, and graduated M.D. from Bellevue Hospital Medical College in 1890.

He settled in Halifax where his brother, the late Dr. D. A. Campbell, who predeceased him by less than two years, had been in practice some years, and who, after the death of the late Dr. D. McN. Parker, became the leading consultant physician in the city and province. Here he soon established himself as one of the most successful practitioners in the city. He was on the staff of the Victoria General Hospital, as a visiting physician, and was Professor of Histology and Examiner in Pathology and Bacteriology in the Medical School. He took an active part in civic and national policies. He was a Conservative in politics, and was twice an unsuccessful candidate for the Nova Scotia Legislature. He was an Alderman and in 1906 was Deputy Mayor of the city.

Dr. Campbell also took a keen interest in military matters, and at the time of his death was Senior M.O. 7th Regiment, Garrison Artillery, with rank of Colonel. He threw himself with great energy into the work of the C.A.M.C. on the outbreak of the war and took a leading part in the organization of the Dalhousie University Hospital (No. 7 Stationary Hospital).

Dr. Campbell was an admirable colleague, loyal and courteous. His co-operation, his unruffled calm, and his gift of quiet and piquant humour will long be missed in our Society meetings.

R. J. B. HOWARD, B.A., M.D., F.R.C.S.

Dr. Howard, who died in England on January 9th, was the elder son of the late Dr. Palmer Howard, dean of the Faculty and professor of medicine in McGill University.

After graduating in arts and medicine at McGill University in 1882, when he was awarded the Holmes gold medal, he spent two years in London and the Continent, and was one of the first Canadians to gain the coveted F.R.C.S. diploma.

On his return to Montreal he was appointed demonstrator of anatomy at McGill and path-

ologist and assistant surgeon to the Montreal General Hospital. Students of that period will remember him as a painstaking and able teacher with an accurate knowledge of his subject.

In 1888 he married the only daughter of Sir Donald Smith, later Lord Strathcona, by whom he had three sons and two daughters. The sons all served in the war and the second was killed in action.

For many years Dr. Howard has made his home in London. He was active during both the recent and Boer wars in hospital duties and in supervising and organising relief work, receiving special mention and the O.B.E. in recognition of his services.

Dr. Campbell Howard, professor of medicine in Iowa University, is a brother and Mrs. Futcher of Baltimore a sister of the deceased.

Abstracts from Current Literature

SURGERY

SURGERY OF THE HEAD AND NECK

Avulsion of Scalp and its Treatment. (L'arrachement du cuir chevelu et son traitement). LENORMANT, CH.: *Jour. de Chir.*, Jan., 1921, Vol. 17, p. 8.

THE author reports two cases, one of which was seen immediately after the accident, when an attempt at reapplication was unsuccessful. It was later treated by Delbet with Thiersch's method of skin grafting. The second case was not seen until some time after the accident and was cured by two seances of skin grafting.

The literature is then reviewed, a complete article having appeared in 1902 by Fouchard when thirty-seven cases were reported. To date some eighty cases have been reported.

There are two types: (1) complete when the whole scalp is torn away and (2) incomplete when the scalp is still retained by a pedicle to the neighbouring tissues. The former is the more frequent composing sixty-seven of the eighty cases reported to date.

As a rule it is the skin which is detached but all the subjacent tissues may be involved even to avulsion of the pericranium. The involvement of the tissues depends on the nature, direction and force of the injuring agent. Sometimes there is scarcely any bleeding although in one case death occurred within the first twenty-four hours from hæmorrhage and shock.

The first period past, a large granulating surface is left which invariably suppurates. Delbet says that spontaneous cure is impossible. The author's prognosis is always guarded as eight deaths occurred in the sixty-seven complete avulsions and one in the thirteen incomplete, making a mortality of 11·2 per cent.

Treatment: Incomplete—Careful shaving, soap, alcohol; careful suturing with drainage. Numerous cases are cited showing primary union, although hæmatoma, deficient blood supply and suppuration are very often causes of failure. For an end result in several of these cases skin grafting was the final procedure.

Complete. Treatment of these cases is entirely different. Suturing of avulsed scalp is illogical and physiologically false as nutrition of the scalp is entirely from the periphery. Sixteen cases were attempted with failure in all. In author's opinion it is a dangerous procedure to cover a wound, which is impossible of complete disinfection, with material destined to become gangrenous. Lairsen reported a case of reimplantation followed by gangrene, osseous necrosis and fatal meningitis. Autoplastic pediculated flaps do not give good results as the whole surface cannot be covered in this manner. The author recommends dermo-epidermic grafts 3 by 4 cm. in breadth and 10 to 15 cm. in length, to completely cover the whole surface (Thiersch).

Results are usually good (with rare failures), sixteen to twenty-four months being required for permanent cure.

R. B. M.

hymogenous Dyspnœa and Thymectomy. BOYADJAFF PIERRE: *Internat. Clin.*, 1920, Vol. 3, p. 80.

THYMOGENOUS dyspnœa is more frequent in young children aged two to four months, but occurs in children up to five years of age. The acute type is more commonly observed, with dyspnœa and occasionally cyanosis and puffiness of face: there is free expiration but inspiratory stridor; hoarse cough and abdomino-cervical tugging. These symptoms temporarily subside if the child's head is bent forward while in sitting posture. Palpable episternal bulging: abnormal dullness over upper chest in mid-line, with shadow under the *x*-ray are valuable signs.

A differential diagnosis is made from congenital defects in epiglottis and pharynx by direct examination of the latter. A chronic type is described where the symptoms are essentially the same as in the acute but milder in degree.

The cause of death in both types is mechanical from the wedging of the enlarged gland into the sterno-costo-vertebral ring thereby pressing on the trachea and the phrenic and vagus nerves, as well as producing congestion and œdema of larynx—(death from strangulation).

Metabolic intoxication has been suggested as the cause, but the author prefers the mechanical explanation.

Treatment. Under general anæsthesia: (ether or chloroform, open method). Operation. A vertical incision is made in mid-line above the supra sternal notch; separate the muscles; expose trachea, incise capsule of gland bulging above sternum; seize the gland substance gently but firmly and remove by cautious dissection seizing and tying vessels as they are exposed. Close the wound by suturing the separated muscles and apply dry dressing.

Results are excellent, and there is immediate improvement of all symptoms. No untoward changes were noted in the general nutrition of patient.

Intubation is not recommended either to relieve symptoms or as part of the operative technique. *X*-ray treatment has been observed to be not only valueless but dangerous. A. D. C.

SURGERY OF THE ABDOMEN, GASTRO-INTESTINAL TRACT AND PERITONEUM

Congenital Atresia of the Œsophagus. KASTNER, ALFRED L.: *Arch. Pediat.*, Nov., 1920.

THE author contends that while congenital atresia is rare, it is not unknown, and that if looked for more diligently it would more often be recognized.

The pathology is curiously constant. There is an upper blind pouch extending from a normal pharynx into the mediastinum. There is then a gap, closed sometimes by a solid cord between the upper and the lower portions of the œsophagus. The lower portion opens through a slit into the trachea just above the bifurcation.

The clinical picture is equally constant and typical. The description is graphic.

From birth the baby's mouth seems filled with excessive mucous which dribbles, or collecting, causes violent choking attacks from which the infant recovers. Food is taken greedily but is at once returned.

The stomach is distended with air, in contrast with the rest of the abdomen which is flat. A catheter introduced into the mouth stops at 12 cm. The normal distance to the cardia is 17 cm.

No case is known to have lived more than two weeks. A gastrostomy at once floods the lung with the fluid introduced into the stomach by way of the opening into the trachea.

F. A. C. S.

The Causation of Appendicitis. SHORT, A. R.: *Brit. Jour. Surg.*, Oct., 1920, Vol. 8, p. 171.

THE author contends that appendicitis was relatively rare until 1895, when there appeared a very definite increase in the disease which continued until the year 1905. After this date the incidence has remained fairly stationary. Facts and figures are brought forward to prove that the increase was not due to more thorough methods of diagnosis or to a realization of the importance of the symptoms.

He found that inmates of institutions on a somewhat plain diet were relatively immune, while amongst the better classes the disease was quite common. Certain primitive countries appear to be immune. In wild animals it is rare, but is quite common amongst animals in captivity, especially apes.

The writer believes that the most probable explanation of the increase during 1895-1905 is to be found in some change in the food habits of the people during that period. He has made a very careful review of all our principal foodstuffs and comes to the conclusion that the lack of cellulose in our diet may be the important factor.

G. A. F.

Post-Operative Mortality in Appendicitis. BROWN, H. B.: *Lancet*, Jan. 15th, 1921, p. 118.

DEATH from appendicitis is most frequent between the ages of five and twenty. Death in a neglected case occurs when appendectomy is performed on the fifth or sixth day. By the fifth to sixth day an abscess wall has already been formed and by removal of the appendix the walls of abscess are disturbed. In twenty-four hours following operation, the patient manifests the signs of bacteræmia which leads to fatal issue.

The author states that abscesses do not rupture spontaneously into abdominal cavity if patient is kept at absolute rest in bed. His procedure of choice is to wait until acute symptoms have subsided then operate, open the abscess cavity and drain. The appendix is removed later.

In cases where gangrene of appendix is unaccompanied by abscess formation early appendectomy is imperative. A. D. C.

An Unusual Tumour of the Stomach. (Granuloma). (D'une curieuse tumeur de l'estomac (Granuloma). VULLET, M. H.: *Rev. Med. de la Suisse Rom.*, Dec., 1920, p. 806.

DR. VULLET reports the case of a man who has suffered with gastric symptoms for the preceding three and a half years. Physical examination of the patient revealed a movable tumour in the left upper quadrant of the abdomen. Examination of stomach contents showed hypochlorhydria and the presence of lactic and butyric acids. No retention. At operation a tumour was found inside the stomach, hanging down from the lesser curvature, like the tongue of a bell. The tumour was completely covered with mucous membrane, and was situated in the submucous coat. The muscular coat was hypertrophied. The tumour was easily removed. The post-operative course was uneventful, and the patient has been in good health ever since (i.e., two years). The microscopic examination of the tumour showed it to be a non-specific granuloma. J.G.W.

The Treatment of Gastric and Duodenal Ulcer (Zur Behandlung des Ulcus Ventriculi et Duodeni). EISELBERG, A.: *Arch. f. Klin. Chir.*, Oct., 1920, Vol. 114, p. 35.

DURING the past year many surgeons have abandoned the operation of gastro-enterostomy and have practised the more radical procedure of excision of the ulcer with the whole ulcer bearing area because of the recurrence of hæmorrhage and ulcer following upon the former operation.

The following data are of interest. During the first years of the war the number of cases seeking relief from gastric symptoms notably diminished but increased during 1918 and is still increasing Admitting that there are many reasons for the increase of such diseases one may deduce that possibly the war nervousness produced in men plays some part. In the author's experience gastric ulcer is far more frequent in men than in women. What the uterus is to the hysterical woman, the stomach is to the nervous man (Gelpke)).

Of one hundred and ninety-two operative cases of ulcer of the stomach treated since August, 1918, thirty-four were pyloric, sixty-four duodenal and ninety-four pre-plyoric. Clairmont for many years has declared that in these pre-pyloric ulcers, gastro-enterostomy does not improve the patient but tends to the development of other ulcers.

In the author's clinic, out of sixty-four cases submitted to gastro-enterostomy with pyloric occlusion, ten required secondary operations for ulcer of the jejunum. Schnitzler pointed out that when a large part of the stomach is resected with the ulcer, the acidity is reduced, and ulcer is not likely to follow.

The advantages of the radical operation (Bilroth II Method) are therefore: (1) extirpation of the ulcer, (2) reduction of the hyperacidity.

We have seen the results of the gastro enterostomies for a period of twenty years with their vicious circles, and peptic ulcers. The results of the radical operation are sufficiently gratifying to give it a more extensive trial, not forgetting the post-operative medical treatment of rest for the stomach and a careful diet.

A. B. I.

Intra-Abdominal and Intra Pelvic Adhesions. SPALDING, CLEMENT B.: *Internat. Clin.*, 1920, Vol. 3, p. 193.

CAUSES: (1) Inflammation, bacterial in origin; (2) injudicious manipulation of viscera; (3) introduction of foreign substances, e.g., oil, etc., into the peritoneal cavity; (4) trauma from without, as in forcible reduction of hernia; (5) idiosyncrasy.

Adhesions are benign in their intent, being absorbed spontaneously in 40 per cent. of cases.

Symptoms: Pain in abdomen with fixation of certain abdominal organs, and partial or total entero-stasis. Adhesions are less common in upper abdomen but when present may give rise to gastro-enteric symptoms. Pelvic adhesions are recognized by inelastic pelvic floor, fixed cervix and by the presence of tumour mass.

Treatment: Prophylactic (1) care in history taking and accurate diagnosis thereby limiting abdominal exploration; (2) avoiding the spread of infective material by packing off with gauze; (3) avoiding unnecessary sponging—never use dry sponges; (4) avoiding introduction of chemicals into abdominal cavity; (5) covering all intra-abdominal wounds with omentum or mesentery or where indicated with omental grafts; (6) avoiding use of drains, if possible, but where necessary these should be rubber or covered with rubber tissue; (7) employing post-operative posturing; (8) establishing early peristalsis; (9) not using oil in any form in abdominal cavity, as this causes rather than prevents adhesions; (10) if any foreign agent or chemical be employed in the prevention of adhesions ether is said to be sometimes of value. A. D. C.

SURGERY OF THE BILIARY TRACT

The Question of the Ideal Cholecystectomy (Zur Frage der idealers cholecystektomie). HABERER: *Zentralblatt f. Chir.*, Dec. 18th, 1920, p. 1530.

HABERER speaks of the "ideal cholecystectomy" as one in which the abdominal wound is closed without drainage.

In seventy-one cases of excision of the gall-bladder within the past two years thirty-one were done by the ideal cholecystectomy method. In none of them was there indication for drainage, i.e., definite abscess. In three of these cases resection of the stomach for ulcer was performed, in five the appendix was removed, in one, on account of pyloric stenosis, a lateral gastro-duodenostomy was necessary. In three cases of empyema of the gall bladder the same operation was not contraindicated. The remainder were cases of a more or less chronic nature, as, cholelithiasis with adhesions to the neighbouring organs. In one case notwithstanding a diffuse purulent peritonitis, the operation was carried out.

Briefly the operation consists of a midline, or right rectus incision, the gall bladder is freed, the hepato-duodenal ligament raised and carefully divided. The hepatic duct is examined for stones and the gall bladder sub-peritoneally shelled out. The cystic artery is tied and cut; the cystic duct is clamped with two fine forceps and divided with the electro-cautery; the stump is tied with silk and covered with peritoneum and buried under the hepato-duodenal ligament which is reunited with silk The rest of the operation is well-known—the abdomen is closed without drainage

Thirty out of thirty-one cases had an undisturbed recovery In one after fourteen days—the wound being healed—there developed a colicky pain which necessitated re-opening, and a stone was removed from the common duct.

A. B. I.

SURGERY OF THE BONES AND JOINTS

Repair of Bone following Fractures. BLAKE, J. A.: *Arch. Surg.*, Jan. 1921, Vol. 2, p. 37.

THE author emphasizes the prime importance of nutrition in the repair of fractures Small detached fragments may if not infected unite with rapidity, and with the production of much callus. When infected these detached fragments will die. In portions of the bone not destroyed the presence of infection produces hyperæmia and stimulates excessive callus with rapid bone production. This is frequently responsible for the bottling up of dead fragments which in general should be removed as soon as detected. If, however, an exuberant callus is desired to bridge a defect, it may be wise to leave the sequestrum undisturbed, on the analogy of the stimulus to osteogenesis exerted by a bone graft, even if of dead bone.

A sequestrum as seen in skiagrams preserves its density for a long time, often casting a shadow much darker than the surrounding active bone. This increased comparative density is of diagnostic value, particularly if a dense area with sharp and irregular contours is surrounded by a clear interval. He refers to the observations of Kenneth Taylor, that whereas bacteria invade the canaliculi, osteoclasts do not, hence what sequestra lose by absorption, if any, is entirely from their surfaces.

Rarefaction is always present in fractured bones and is due to disuse rather than to infection: the latter playing its part rather by limiting function than as a direct toxic factor.

Operation for non-union should be delayed when marked rarefaction exists in one or both main fragments. An apparatus permitting use of the limb, if applicable, will improve the circulation and nutrition. An inlay graft is not suitable for these cases but is indicated when the ends are rounded and the medullary cavity plugged: evidences of reparative power

A fracture should be reduced as soon as possible. Repair in recent fractures is rapid, new bone appearing early and the healing of soft parts may interfere with reduction if postponed. The production of new bone does not go on forever and reparative power should be conserved not wasted.

Suspension with early mobilization of contiguous articulations favours circulation, reduces swelling, expedites repair and lessens the frequency of rarefaction and non-union. The better condition of the soft parts is an index of the better condition and nutrition of the bone.

The strain of weight bearing should not be allowed until the new bone has established its adult condition as evidenced by the re-establishment of the Haversian systems, which can be determined by rœntgenograms. F. J. T.

Osteomalacia (so-called) of Famine. L'Osteomalacie (dite) de famine. CRAMER, ALEC. and SCHIFF, PAUL: *Rev. Med. de la Suisse Rom.*, Nov., 1920, p. 746.

IN 1919 the doctors of Vienna and of various parts of Germany described a disease accompanied by osseous changes, and supposed to be due to the food conditions existing in those countries. In May, 1920, the disease appeared in Russia.

Although somewhat allied to true osteomalacia and late rickets, the disease shows some very important differences, which warrant it being classified as a separate entity.

It is usually seen in females after the menopause (75 per cent. in females, of whom 60 per cent. were past the menopause). The onset is insidious, being characterized by vague pains, not specially referred to the bones. This stage may last several months, when the course becomes more active. The pains become worse and are referred to the bones. The patients notice that they cannot walk up and down stairs. Kyphosis develops rapidly in the course of a few weeks. In severe cases the patients are confined to bed. The bones all become soft and mould easily.

The cardinal symptoms are: (1) Pain in the ribs, most marked in the seventh and eighth. The ribs become extremely soft and are easily moulded with the hand. This is an early and constant symptom.

(2) The gait, which is of a peculiar waddling character, like that of a duck, i.e., slow, short, painful, careful steps. The pelvis moved "en bloc." There are no characteristic blood changes, and no abnormalities of the urine, with the exception of slightly increased elimination of calcium.

The question of the endocrine functions is carefully gone into, as is also the metabolism, more particularly that of calcium and phosphorus and CO_2.

The *x*-ray changes are very marked and diagnostic. They show an extreme rarefaction of the bones with the exception of those of the cranium and face. In the long bones the changes are most marked at the juxta-epiphyseal line. The post-mortem findings are carefully described and the differential diagnosis is discussed at length.

The cause of the disease is considered to be due to the lack of nourishment over a prolonged period, more particularly of those foods which are rich in mineral salts, i.e., milk, eggs, and fresh vegetables. The disease responds readily to treatment. Ordinary diet with the addition of 3 grammes of calcium chloride and 3 milligrammes of phosphorus per diem being all that is required. The phosphorus is best given in the form of phosphorated cod liver oil.

The authors give a very complete report of a case treated in their clinic. There is a very full bibliography of the subject attached.

J. G. W. J.

The Nature of Arthritis and Rheumatoid Conditions. PEMBERTON, RALPH: *Jour. Amer. Med. Assoc.*, Dec. 25th, 1920, Vol. 75, p. 1759.

FOCAL infection should not be considered the only cause of arthritis. Diminished metabolism seems to excite arthritis, and *x*-rays, radiotherapy, heat, massage and exercise in all probability are beneficial to arthritis by advancing metabolism. Arthritics show a lowered sugar tolerance more or less proportional to the severity of the disease. Lowered sugar tolerance is also found in thyroid conditions, nephritis and cancer, and is probably evidence of disturbance of the oxidative or combustive processes. Hence

the sugar intake may in certain arthritic conditions be reduced to suit the burden to the capacity of the organism, and the author suggests that the joint improvement following an operation under ether may in some cases be due simply to starvation. He notes that diabetics in the stage of sugar tolerance are unusually free from rheumatoid conditions. Arthritis coming on during convalescence from a severe illness (influenza, dysentery, etc.) may be due to the increased food intake to an amount too great for the system to handle, hence lowered sugar tolerance and with it a rheumatoid condition. Joints have a notoriously poor blood supply, hence suffer early from low metabolic activity. Massage is beneficial because it stirs up the glycogen metabolism of the muscle. Oxygen delivery to various parts of the body (by hæmoglobin) varies, and may be lessened by cold and exposure chilling the blood in a given area. Thus metabolism is lowered and the joints suffer first. Hence beneficial effect of hyperæmia.

Treatment should involve not only removal of focus of infection but the burden of food intake should be adjusted to suit the altered metabolism. The caloric intake of the patient should be determined and reduced if too high.

J. A. N.

Amputations. CORNER, E. M.: *Lancet*, Jan. 15th, 1921.

THE writer calls attention to the fact that there must be a closer relation between the surgeon and the artificial limb maker. In other words better results can be optained when it is possible to fit certain artificial limbs. He emphasizes that fewer amputations need to be taught to students. He is a strong advocate of the high Syme discarding other amputations from metatarso-phalangeal to the high Syme. He is against the Stokes-Gritti, and a strong advocate for Huggins' hip amputation, and Spence's shoulder. He makes a strong point of the painful stump and unjust "malingering' and proper treatment of neurasthenia in these cases. Light metal limbs are advocated. W. G T.

Congenital Syphilitic Epiphysitis in Adolescence. GAENSTEN, E. J. and THALKIMER, WM.: *Amer. Jour. Orthop. Surg.*, Jan., 1921. Vol. 3, p. 2.

THE authors point out that congenital syphilitic epiphysitis is usually described as appearing in the first few months of infancy. They describe a case occurring in a white boy of thirteen, with the reasons for which it was considered syphilitic

The patient complained of pain and lameness in the left hip, following trauma. As there was found decided weakness of leg and thigh, with one-half inch shortening, loss of reflexes and moderate atrophy, it was thought to be a case of mild poliomyelitis. Measures taken to restore muscular power were followed by gradual improvement. No *x*-rays were taken at the time. One year later the pain returned. An *x*-ray of the hip showed a rather flattened trochanter with diffuse areas of rarefaction scattered throughout it and the adjacent portion of the femoral shaft. Epiphyseal line could not be made out. On the assumption that the condition was one of low grade infection the trochanter was opened The areas of rarefaction were found to be due to cartilaginous masses in the midst of the cancellous bone. Little help was obtained from microscopic examination of specimens removed, but in the meantime the pain left. A return of symptoms eight months later led to further study of the case, when it was discovered that periosteal thickening existed along the femoral shaft, in which obliterating endosteitis was found. The Wassermann previously negative, was now four plus, and the pain was promptly relieved by anti-syphilitic treatment. The weakness of the leg was thought to be Parrot's syphilitic pseudoparalysis A history of syphilis in the father was obtained.

J. A. N.

SURGERY OF THE NERVOUS SYSTEM

Intracranial Injuries in the New Born. BAILEY, HAROLD: *Amer. Jour. Obst. and Gyn.*, Oct., 1920, Vol. 1, p. 52.

THE paper is based on the study of three hundred and forty-one cases of still-born infants. In one hundred and ten the labour had been obstructed or protracted

Literature is quoted establishing abundantly that intracranial hæmorrhage due to traumatism during birth is common; that it is a frequent cause of death, and of morbidity if the children survive.

Considerable support is given to Little's contention that asphyxia alone may cause cortical hæmorrhage. Other causes are compression of the head, and over-riding of the sharp edges of

the cranial bones which thus may tear the cerebral veins leading to the longitudinal sinus, during the passage of the head through a small pelvis. Another frequent cause is pressure from forceps. Where the injury is great little can be done. In operable cases large plastic flaps have not proved of value owing to the high mortality. The author favours sub-temporal decompression with drainage

Depressed fractures should be elevated and if associated with signs of intracranial pressure the dura should be exposed and incised if there is evidence of subdural injury.

Emphasis is placed upon the frequency of the occurrence of these lesions and their ætiology in asphyxia and pressure. F. A. C. S.

Traumatic Epilepsy following War Wounds of the Head (Zur Frage der traumatischen Epilepsie nach den Schussverletzungen des Krieges und ihrer Behandlung.) GULEKE: *Arch. f. Klin. Chir.*; Oct. 22nd, 1920, p. 764.

GULEKE confines his remarks to a discussion of a few of the main points. In his experience epilepsy most often occurs in cases in which the loss of bone is small, the large defects showed the complication less often. It being granted that the cause resides in a cortical scar, involving the meninges as well, he conceives that with small defects a circumscribed area of the cortex is, as it were, hung up to the bone by the scar, and that this fixation is quite unyielding, so that the respiratory and circulatory movements of the brain bring about a continual tug upon the cortical area concerned. On the other hand, where the loss of bone is extensive, the scar, particularly in its centre, is much more yielding and the movements of the brain are less interfered with.

The retention of foreign bodies in the brain, in his experience, does not render the patient more liable to epilepsy.

In the matter of treatment he agrees with Lexer and others that the cortical scar should be excised into healthy tissue and the space left should be filled with a free fat transplant. While some proceed in the same sitting to fill the bony defect by plastic operation on the cranium, Guleke finds it better to do this six months later. In a few cases the transplanted fat degenerates into an oily fluid but in the majority he finds that it lives. In any case it is the best material available to prevent fresh adhesions. In fifty cases it happened only once that the transplant was discharged through the wound, and in this there was some infection.

As to results he is obliged to report that in two-thirds of the cases the operation brought about no improvement in the epilepsy. Of those that were improved he found that the scar in the majority involved the motor region. Operation should not be done soon after the injury inasmuch as early epileptic attacks quite frequently cease for good. If they continue after six months operation is fully justified. E. A.

Nerve Suture: An Experimental Study to Determine the Strength of the Suture Line. MILLER, E. M.: *Arch. Surg.*, Jan., 1921, Vol. 2, p. 167.

IN suturing nerves where large gaps exist, it is frequently necessary to posture the neighbouring joints in extreme flexion in order to permit approximation of the separated ends. With the object of determining the length of time during which such posture should be maintained Miller carried out a series of experiments on dogs investigating the breaking-point of the suture line at varying periods. Employing fine catgut or silk epineural sutures he found that the tensile strength of the suture line which increases most markedly during the second week shows a slight further increase during the third week, by this time becoming almost directly proportional to the diameter of the nerve. During the fourth and fifth week there is but little change. The epineural sutures play but small part after the second week.

After operating on the human sciatic nerve where flexion has been required he advises waiting six to eight weeks before extending the joint; four weeks in the case of the median or ulnar. F. J. T.

SURGERY OF THE VASCULAR SYSTEM

Resume of the Circulatory System. Review of the Literature of 1917, 1918 and 1919. CALHOUN, HENRIETTA: *Amer. Jour. Dis. Child.*, Jan., 1920, Vol. 19, p. 62.

THE retrospect covers normal and abnormal conditions of the heart and vascular system, including the physiological and therapeutic advances. The operation of heart massage, either extra abdominally by fingers beneath the costal arch or through an abdominal incision is recorded

with several successful cases, even after periods as long as thirteen minutes after cessation of the heart beat.

Blood transfusion is briefly reviewed, and the superior longitudinal sinus route in infants is noted following Knox's first case reported in 1917. The work on the life of the transfused red blood cell—thirty days—total blood volume in health and disease; the coagulation time and the factors entering into coagulation are all discussed briefly and original references given.

Blood work in basal metabolism estimation in thyroid surgery is reviewed and the newer blood examinations noted. The retrospect covers the work on anæmias and leukæmias, and the annotated literature is complete and is readily available for each subdivision of blood-vascular work, and covers one hundred and twenty-three references to the literature. C. K. P H.

The Result and Feasibility of Treating Lymphangiomata with Injections of Boiling Water. REDER, FRANCIS: *Surg. Gynæc. and Obst.*, Jan., 1921, Vol. 32, p. 70.

LYMPHANGIOMATA are uncommon The author had four cases in ten years' service in a hospital of one thousand beds.

Eight cases were injected with boiling water. All were benefitted, in none did the tumour entirely disappear. There was a most severe reaction in several cases, in one endangering life and in none were the good results seen as in similar treatment of hæmangiomata. The injection converts the soft mass into a hard firm mass into which no second injection can be forced. These tumours are very easily infected, lymph sinuses form and their surgical treatment is difficult. The hot water injection is to be undertaken with reserve and is often liable to produce severe local results with ultimate disappointment. When possible local excision is preferable. Excellent photographs of five cases are shown.

C. K. P. H.

SURGERY OF THE GENITO-URINARY SYSTEM

KIDNEY

Bilateral Renal Dystopia. WALTHER, H. W. E.: *Surg. Gyn. and Obstet.*, Jan., 1921, Vol. 32, p. 82.

DR. WALTHER reviews the literature of misplaced kidneys, the symptomatology and embryology. He reports a case of bilateral dystopia of the kidneys where both organs were in the levis pressing on the vesical neck, causing retention of urine, trabeculations and diverticulum of bladder. Pyelographic picture shows the kidneys in the pelvis.

No operative treatment could be done, but patient improved on bladder drainage and became symptomless after a short treatment of drainage and lavage. R. E. P.

BLADDER

Emptying a Chronically Distended Bladder: Description of a Simple Device. VAN-ZWALENBURG, CORNELIUS: *Jour. Amer. Med. Assoc.*, Dec. 18th, 1920, Vol. 75, p. 1711.

THE author draws attention to the evil practice of emptying a chronically distended bladder too quickly, and reports a case of chronic bladder distention in which he controlled the rate of the bladder outflow through a tied-in catheter and a length of rubber tubing, by hanging the outlet over the edge of a container at varying elevations above the base of the bladder.

The author commenced evacuation of the bladder with the outlet twelve inches above the base of the bladder and gradually lowered the can during the first forty-eight hours, when continuous drainage without any pressure obstacle was permitted. F. S. P.

CYSTOSCOPY

The Wax Bulb Ureter Catheter for Routine Use. KEYES, EDW. L., JR.: *Jour. Urology*, Dec., 1920, Vol. 4, p. 563.

THE application of the wax bulb upon the ureter catheter first suggested by Dr. Howard Kelly for the detection of ureteral calculi through his open tube cystoscope, and later adapted to any type of cystoscope, has not had as great use as is desirable. This is due to the difficulty of avoiding cystoscope scratches and the complications in the cystoscopic procedure resulting from efforts to prevent such scratches.

Keyes has demonstrated by a few simple experiments that the cystoscope scratches are quite different from the scratches made by the calculus. He has therefore made it a part of his cystoscopic routine to attach the wax bulb to an ordinary catheter, the only precautions taken being to use a bulb capable of running freely through the cystoscopic channel, to thread the

wax tip catheter backwards into the small channel at the ocular end of the cystoscope and to make sure that the wax bulb does not come into contact with the lever at the vesical end of the cystoscope. The catheter may be withdrawn after the withdrawal of the cystoscope, or the catheter and telescope may be withdrawn in one piece.

This method has been used as a routine by Dr. Keyes and several of his associates for the past year. No difficulty has been found in differentiating instrumental scratches from stone scratches. F. S. P.

SYPHILIS

Prophylaxis of Syphilis with Arsphenamin. MICHEL, LEO. L. and GOORMAN, HERMAN: *Jour. Amer. Med. Assoc.*, Dec. 25th, 1920, Vol. 75, p. 1768.

THE authors call attention to a prophylactic measure of injecting arsphenamin in small doses in persons presenting no lesions, and who are definitely known to have been exposed to syphilitic infection. The prophylactic doses average 0.3 gm. of arsphenamin, the average number of doses being three. The authors merely refer to the fact that the method is likely to encounter objections, but do not deal with this point in detail. F. S. P.

Involvement of Nervous System During Primary Stage of Syphilis (continued study). WILE, UDO. J. and HASLEY, CLYDE K.: *Jour. Amer. Med. Assoc.*, Vol. 76, p. 8.

FOLLOWING the work of Wechselmann in 1912 and Wile and Stokes in 1915, a study of the spinal fluid in two hundred and twenty-one cases of pre-roseolar syphilis was made. No cases presented any clinical evidence of syphilis except the primary sore and in one hundred and six the blood Wassermannn was still negative.

Of the forty-nine cases with abnormal spinal fluid, twenty-five had increase in albumen and globulin, twelve had pleocytosis and the Wassermann was positive in eight.

Marked improvement followed in these cases upon the institution of intensive anti-syphilitic treatment and they conclude that the abnormal spinal fluid is more the result of a transitory roseola of the meninges without subsequent damage, than to the advent of permanent neurosyphilitic involvement.

A. M. J. T.

The Urine in Syphilis. KLAUDER, JOS. VICTOR and KOLMER, JOHN A.: *Jour. Amer. Med. Assoc.*, Vol. 76, p. 102.

URINARY abnormalities were found in three out of forty-three cases of primary syphilis and in four out of forty-six cases of secondary syphilis. Albumen was present in all cases, casts in all but two, and red blood cells in two cases. These abnormalities disappeared after anti-syphilitic treatment with arsphenamin and mercury. Urinary abnormalities are regarded as due to renal invasion by spirochæta pallida rather than to syphilotoxins. Spirochæta may be found in the urine of cases of acute syphilis. Complement fixation on urine is very apt to give falsely positive results. A. M. J. T.

Mercurial Stomatitis. MAUREL (Gazette des Hopitaux): reported in *Urologic and Cutaneous Review*, Jan., 1921, Vol. 25, p. 44.

IN the poisoning due to mercury used as medicine, stomatitis is often the only manifestation and persists as long as the drug is administered. The different salts of mercury and the different modes of administration differ in poisoning effects. The biniodid in the form of Ricord's pills is well tolerated up to 4 or 5 centigrams daily, and sometimes as high as 10 centigrams. Corrosive sublimate in the form of Van Swieten's solution or Dupuytren's pills begins to produce stomatitis at 3 cg. a day. Mercurial inunction is more apt than any other method to produce stomatitis At six grams daily there is danger. It comes suddenly and is generalized, and is more grave and of longer standing. Injections of insoluble salts are more prone to produce stomatitis than injections of soluble salts. Among insoluble salts grey oil and calomel are two most important. Injections of soluble salts rarely produce stomatitis, still this eventually may arise with doses of .01 gram of the cyanide or of .02 or .06 of the benzoate.

Renal lesions, hypatic trouble, general health are all factors in mercurial stomatitis. Prognosis is variable; not grave except in very severe cases. It recovers spontaneously. Most authorities regard the disease as due to an infection with fusiform spirillum, but Vincent, Marfan, Paisseau describe many forms of bacteria. The kind of organism is still a mooted point.

Treatment should be prophylactic above all else. Never give a patient mercury without a careful examination of the teeth and minute

directions to the patient as to the care of the mouth. Suspend treatment upon the slightest evidence of stomatitis. If stomatitis has occurred use chlorate of potassium both as mouth wash and internally. Or use alum 5 per cent. as mouth wash. Various internal medication has been advised, but the local treatment is the most important. Recently applications of arseno-benzol and its derivatives in powder have been recommended. K. I. C.

RADIOLOGY

X-ray Treatment of Tonsils and Adenoids. WITHERBEE, W. D.: *Amer. Jour. Roentgenol.*, Jan., 1921, Vol. 8, p. 25.

IN a series of sixty cases of hypertrophied tonsils and adenoids, treated with *x*-ray, Witherbee reports a decrease in the size of the glands; the evacuation of contents of the crypts, and in thirty-two out of thirty-six cases the disappearance of pathogenic bacteria as shown by cultures made from the tonsillar crypts. These changes begin about four weeks after treatment and are progressive for several weeks. The age of the patients treated ranged from sixteen months to fifty years.

The majority of his cases received one masssive dose, the following factors being used: 8″ S.G., 5 M.A., 10″ D., 3 M.M. of aluminum, and from three to seven minutes time for each exposure, depending on the age of the patient. In place of this massive dosage, the author now advocates a fractional dosage using, 7″ S.G., 5 M.A., 10″ D., 3 min. 18 sec. with 3 M.M. of aluminum, in four treatments at two-week intervals. Three areas may be treated, i.e., the skin surface over each tonsil and when necessary the upper posterior cervical region.

This method is of value in case of tonsillar disease associated with chronic endorcarditis, pericarditis, hemiplegia and conditions generally which contraindicate operative measures.

A. S. K.

Induced Atrophy of the Hypertrophied Tonsils by Roentgen Ray. MURPHY, WITHERBEE, CRAIG, HUSSEY and STRUM: *Jour. Amer. Med. Assoc.*, Jan. 22nd, 1921, p. 228.

IT has been noticed in the past that lymphoid tissue is much more susceptible to the *x*-ray than are the other tissues. Advantage is taken of this fact to reduce hypertrophied tonsils, their shrinkage being accompanied by the proper drainage of the crypts with resultant clearing up of the infections. The technique employed is as follows: "The patient is placed on a table in such a way that the ray enters under the angle of the jaw and penetrates through the soft tissues to the region of the tonsil. The area exposed on each side about three square inches. The spark gap, measured between points, is eight inches; 5 m.a. are used at ten inches distance from the target to the highest point of skin exposed. The time varies from three to seven minutes according to the age of the patient." The ray is filtered through 3 mm. aluminum. The report is based on the result of treatment of forty-six patients ranging from three and a half to forty-five years of age. No patient was treated during a time when the throat showed evidence of acute infection. In all but four cases a marked improvement was noted within two weeks. "During the period of atrophy (one to two months) the crypts opened and drained, and in all but a few cases, the exudate disappeared and the surface of the tonsil became smooth, pale and of a healthy appearance." J. D. M.

Roentgen Examination of the Urinary Tract made Opaque. BRAASCH, W. F.: *Amer. Jour. Roentgenol.*, Dec., 1920, Vol. 7, p. 584.

BRAASCH suggests the use of the term "urography" to represent the roentgenographic examination of the entire urinary tract, restricting the use of the terms "pyelography", "ureterography" and "cystography". As urography entails unusual and highly specialized technical difficulties, and unless judiciously employed is not without great dangers to the patient, its use should be confined to experienced urologists and roentgenologists working in close co-operation. Furthermore, it should be used only when the clinical diagnosis cannot be made without it.

Urography is contra-indicated: (1) when the patient is in advanced age, or greatly emaciated; (2) in cases of advanced bilateral renal disease; (3) when it is apparent that surgical treatment will be of no benefit.

The use of collargol has been discarded; its solutions are not really solutions, but suspensions and the undissolved silver particles act as foreign bodies in the kidney pelvis or glomeruli and frequently cause infection Thorium makes an admirable solution, but unfortunately occasionally has toxic effects and it is difficult and expensive to procure. Solutions of the iodides or bromides

are now the most widely employed; they are cheap, easy to procure and cast excellent shadows, They may be slightly irritating, particularly if retained in the kidney pelvis. 5 c.c. to 10 c.c. usually will suffice, introduced by the gravity method. After the *x*-ray exposure is completed, it is advisable to remove the injected medium as completely as possible. Any medium if allowed to remain in the renal pelvis may be the cause of infection. Bromide or iodide solutions may cause irritation even without infection when retained in the pelvis. The advantages of the opaque solution are pointed out in hydronephrosis, neoplasm, nephrolithiasis, anomalies, vesical diverticuli and prostatic obstruction.

W. A. W.

The Red Blood Cell Content on Those Handling Radium for Therapeutic Purposes. MOTTRAM, J. C.: *Arch. Radio. and Electroth.*, Dec., 1920, p. 194.

RADIUM workers suffer from leukopenia affecting polynuclears and lymphocytes; reduction to one-half is common The red cells are also reduced and the colour index is high The author describes in detail three fatal cases of anæmia occurring in radium workers. One case died in spite of three blood transfusions. Twenty days before death the red cells were 1,100,000 and the colour index was ·68, polynuclears 600, lymphocytes 600. The second case had a blood count of 800,000, colour index 1·3, leukocytes 1520. A third similar case is described. Non-fatal cases improved in their blood count after two months' holiday. The effect of two months' holiday in one non-fatal case was as follows: Before holiday, polynuclears 1,382, lymphocytes 778; after holiday, polynuclears 3,835, lymphocytes 2,665.

A. H. P.

Histological Changes in the Bone Marrow of Rats Exposed to the Gamma Radiations from Radium. MOTTRAM, J. C.: *Arch. Radiol. and Electroth.*, Dec., 1920, p. 197.

TWENTY-THREE rats were taken, eight were used as controls and fifteen for exposures. Exposures of from twelve to four hundred and sixty hours were given, using 160 mgm. radium bromide, filtered through 2.25 mm. of lead. An exposure of twelve hours under these conditions is equal to one six-hundredth of a Rad (Prof. Ross, Middlesex Hospital). The central position of a cross section of the bone marrow was examined in each rat. Exposures up to forty-eight hours marked increased mitotic figures; often exposures of longer than forty-eight hours the mitotic figures decreased.

These results explain the blood changes found in radium workers, viz.: leukopenia and anæmia caused by interference with the output of blood cells from the bone marrow. Hard *x*-rays may effect bone marrow. From these findings one is led to infer that hard *x*-rays should be used on bone marrow in cases of spleno-myelogenous leukæmia.

A. H. P.

New Roentgenotherapy in Cancer. SITTENFIELS: *Jour. Amer. Med. Assoc.*, Jan. 8th, 1921, p. 99.

MARKED advances in roentgenotherapy have been made in Germany during the last year and a half. These take the form of more powerful apparatus, operating with an intensity of from 180,000 to 220,000 volts; improved tubes to tolerate this high tension voltage; and improved methods of measurement of dosage and ray absorption in the deeper tissues

Three standard types of tubes are in use, the Lilienfeld, Muller Siede-röhre (water cooled), and the Fuerstenau-Coolidge These tubes are capable of operating with a sixteen to eighteen inch spark gap, and of running constantly for from eight to ten hours a day. It is found that, using such tubes and this high electrical tension, at a certain point of filtration known as the homogeneous point, an even and homogeneous radiation is obtained which cannot be altered qualitatively by further filtration. By means of such delicate instruments as the electroscope of Wulf, and the new iontoquantimeter of Szillard, the exact dosage, dispersion and absorption coefficient have been determined. It has been established that the exact dosage for carcinoma tissue is 90 per cent. of a skin erythema dose, for sarcoma 70 per cent., and for the ovary, 25 per cent. It is most important that all parts of the tumour receive an even and homogeneous radiation sufficient to destroy all the cancer tissue and thus prevent recurrence. By the pre-operative application of radiation, the danger of transplanting cancer cells during operation is mitigated. Clinical knowledge as to the location of the tumour and its biology must accompany the skill of the roentgenotherapist that he may intelligently select or combine

surgery, radium and the roentgen ray. As examples of the results obtained: in the clinic of Opitz in Freiburg, the focal distance used is 50 cm., and four fields are radiated at one hundred and twenty minutes each, at one sitting of eight hours—result, no cancer of the uterus has been operated on here since January 1st, 1919. Wintz has radiated about 3,000 cases of cancer of the uterus in the last seven years. In about 70 per cent. of the cases of cancer of the body of the uterus the disease was arrested over a period of four years, and in the cervix cases 45 per cent. of the patients were alive after four years In cancer of the breast the tube distance is increased to 70 or 90 cm. from the skin and a filter of 0·8 mm. of copper is used. In the former case three hundred and twenty minutes treatment are necessary, and in the latter, five hundred and thirty-five minutes, or nearly nine hours.

Carcinoma of the prostate is treated like a carcinoma of the uterus Cases of osteosarcoma, osteomyelitis sinuses and fistula and tuberculous joints were treated with gratifying results.

J. D. M.

MEDICINE

Juvenile Tabes: Review of the Literature and Summary of Seven Cases. PARKER, H. L.: *Arch. Neur. and Psych.*, Feb., 1921, p. 121.

THE features of the disease which Parker attempts to summarize are: The insidious onset, the lengthy and even latent course of the disease, during which time no subjective complaint may be made, in contrast to the frequent optic atrophy and total blindness that may occur. The frequency of incontinence of urine, the relative rarity of such striking phenomena as ataxia, girdle sensations and lightning pain, and finally the frequent paretic termination, are features that stamp juvenile tabes with a distinctive mark and distinguish it from the adult type.

G. S. M.

Epidemic (Lethargic) Encephalitis. Cultural and Experimental Studies. Preliminary Communication. THALHIMER, WILLIAM: *Arch. Neur. and Psych.*, Feb., 1921, p. 113.

THALHIMER confirms the results reported by Loewe and Strauss. The infectious agent is apparently constantly associated with epidemic encephalitis. It passes through a clay filter capable of holding back ordinary bacteria, the filtrate producing a disease in rabbits which is very similar to the clinical features of the human disease. The microscopic brain lesions are identical with those found in fatal human cases. The virus has been passed through a number of series of rabbits. The virus belongs to the class usually termed "filtrable viruses".

By means of ascitic fluid tissue medium, an extremely minute filtrable organism has been cultivated. This organism has been grown from the brains of about 80 per cent. of the rabbits inoculated with filtered virus. G. S. M.

Angina Pectoris. Electrocardiographic Study. WILLIUS, F. A.: *Arch. Int. Med.*, Feb., 1921, Vol. 27.

A CRITICAL study of one hundred and fifty cases of angina pectoris in detail has afforded some illuminating results. As the author points out, patients with angina pectoris occasionally do not present objective evidences of heart disease.

In his series, nineteen had aortic lesions, two had mitral stenosis, and the remaining one hundred and thirty-four indeterminate pathological lesions. Of this latter group, i.e., 86·5 per cent., a classification is difficult if one is to accept Allbutt's theory discrediting the coronary hypotheses.

Careful electrographic tracings are made with the resulting conclusions that no findings by the electrocardiogram are pathognomonic of the disease. In one-third of the electrocardiograms, T wave negativity was significant, and was regarded as an important abnormality. Abnormalities in the T wave contour, affecting both the positive and the negative wave, were considered very significant. Abnormal Q. R. S. complexes in all derivations of the electrocardiogram in 14·2 per cent. of the records.

The cardiac mortality of the complete group was 46·7 per cent., definitely contrasted by the higher mortality attending those patients having T wave negativity, (70·3 per cent.), and abnormal Q. R. S. complexes in all derivations (62·5 per cent.) of their electrocardiograms. The paper in all its details is well worthy of close study.

C. F. M.

Spirochetal Pulmonary Gangrene. FISHBERG, M. and KLINE, B. S.: *Arch. Int. Med.*, Jan., 1921, Vol. 27.

IN a very marked case of coalescing lobular

and bronchial pneumonia of both upper lobes, and the right middle lobe, the ætiological factor was regarded as the spirochæta bronchialis of Castellani. An extensive gangrenous ulceration in the right lower lobe, associated with the consolidated lung, was the main habitat of the organism, which was easily found in smears from the sputum, and later from the gangrenous sections at post mortem. The diagnosis was made before death.

Ever since Oberemier reported the presence of spirocheta, or spirilla, in the blood of patients suffering from relapsing fever, many diseases have been found associated with germs of this species. Apart from syphilis, yaws, Weill's disease, and Vincent's angina, the more common pyorrhea alveolaris has been associated with a similar cause. The sputum of some forms of bronchitis have likewise contained spirochetes in large quantities, and at times the symptoms have resembled those of pulmonary tuberculosis.

Castellani in Ceylon came to the conclusion after much observation, that there was a definite form of bronchial and pulmonary disease caused by spirochetes, and to this he gave the name of bronchial spirochetosis. Since that time, many other cases have been recorded.

During the recent war similar observations have been made, more especially among the tropical troops brought to Western Europe.

In making an ætiological diagnosis of this condition in the lungs, it is well to remember that spirochetes are sometimes normally present in the mouth. Where, however, their preponderance is overwhelming in the sputum of pulmonary infections, there would seem to be no reasonable doubt as to their ætiological importance.

C. F. M.

Bronchial Asthma: Response to Pilocarpin and Epinephrin. ALEXANDER, H. L. and PADDOCK, R.: *Arch. Int. Med.*, Feb., 1921, Vol. 27.

A DETAILED study of a large series of cases of bronchial asthma has been made by the authors in the hope of correlating the findings which all, or nearly all, might present.

Asthma has been considered due to many causes, among which may be mentioned vasomotor neuroses, exudative diatheses, increased tone of the vagus nerve, sensitiveness to foreign proteins, to disordered metabolism, bacterial infection of the respiratory tract, and to certain abnormalities in the nose.

Very thorough examination of twenty cases failed, however, to reveal either by physical examination, routine laboratory tests, or drug tests, any constant associated condition. The most frequent finding was abnormal increased sensitiveness to pilocarpin. Such cases frequently present constitutional defects (status lymphaticus), and abnormal reactions usually described as characteristic of the condition called vagotonia. The majority of cases reacted to epinephrin, with an abnormal rise in blood pressure, and other characteristic signs,—pallor, tremour, sometimes rigor,—denoting increased sensitiveness to this drug.

The relation between low blood pressure and epinephrin reaction was apparent, while the smaller number of cases with normal or high blood pressure gave regularly normal reactions.

In the treatment of these cases it was found that patients reacting excessively to epinephrin were relieved by 0.25 c.c., a much smaller dose of the drug than is usually employed. C. F. M.

Experimental Studies in Diabetes. ALLEN, F. M., *Amer. Jour. Physiol.*, Jan., 1921, Vol. 54.

THE INFLUENCE OF COLD ON DIABETES

WORKING upon a series of twenty-four dogs rendered almost diabetic by removal of pancreatic tissue the author attempted to determine whether cold in itself would render the animals diabetic. One-half of the animals were kept out-of-doors during the winter in New York, while the remaining half were kept in a building at room temperature. His conclusions were that there was no greater tendency for those outside to become diabetic. Cold in certain instances does produce hyperglycæmia and glycosuria, but it is due to a decreased ability on the part of the tissues to burn carbohydrate *per se* without any direct depression of pancreatic function.

THE INFLUENCE OF PREGNANCY UPON DIABETES

Working with dogs rendered almost or definitely diabetic and subsequently pregnant the following conclusions were considered justified.

1. Probably no appreciable quantity of internal pancreatic secretion passes from fetus to mother.

2. There is a slight lowering of the carbohydrate tolerance during pregnancy, but this is slight for pregnancy failed to produce diabetes in

a dog where removal of 0.1 gram of pancreatic tissue sufficed for that purpose.

3. Experiments support Joslin's contention in the feasibility of completion of pregnancy by diabetic women under suitable conditions of treatment. E. H. M.

Source of Uric Acid Excreted in the Urine after Atophan. GRAHAM, G.: *Quart. Jour. Med.*, Vol. 14, p. 10.

IT has been well known that in gout, atophan increases the output of uric acid in the urine. Likewise sodium salicylate, aspirin, and sodium benzoate render the kidneys more permeable for uric acid. But the actual reduction in blood uric acid is not sufficient to account for the increased output. Where does the "extra" uric acid come from? There are two possible sources for this uric acid: (1) the uric acid held in solution in the tissue fluids; (2) the uric acid deposited in the joints and tissues of the body. Studies of the author on an advanced case of gout would indicate that the "extra" uric acid came from that held in the tissue fluids, by passing into the blood stream as the concentration in the latter became lowered. Any evidence that uric acid already deposited in the tissues can be redissolved is lacking. E. H. M.

Mechanism of Urea Excretion. OLIVER, J.: *Jour. Exp. Med.*, Feb., 1921, Vol. 33, p. 177.

THE author reviews the theories of the mechanism of renal excretion and discusses the improbability of a purely physical filtration through the glomerulus with secondary resorption of fluid by the convoluted tubules. Urea is a "non-threshold" substance passing into the glomerular filtrate in the same concentration that it is found in the blood. With a blood urea of 0.07 per cent., to obtain a litre of urine with a urea concentration of 5.5 per cent. it would necessitate the absorption of 77,500 c.c. of water by the tubules. By injection experiments with xanthydrol, which with urea forms a characteristic cystal, urea concentrations higher than those in the blood were demonstrated in the cells of the proximal convoluted tubules. Such findings can be explained only by an active secretion on the part of these cells. E. H. M.

Diagnostic Significance of Abdominal Pain in Children. HUTCHISON, ROBERT: *Brit. Med. Jour.*, Jan. 1st, 1921.

"ABDOMINAL pain in a child must always be a source of anxiety to the doctor. It may mean so little or so much." This subject is divided by Hutchison into two main classes:

1. Extra abdominal causes of pain, under which heading he discusses pain caused by spinal caries, herniae, hip disease, herpes zoster and thoracic conditions such as acute pneumonia.

2. Intra-abdominal causes of pain. This is further divided into (1) cases of sudden or catastrophic pain, and (2) cases of chronic or recurrent pain.

Under subdivision (1) are considered such conditions as *acute indigestion*, appendicitis, or some form of acute intestinal obstruction, of which that due to intussusception is specially frequent in the child. Among the rarer causes to be considered are Henoch's purpura and renal colic.

(2) Chronic or recurrent pain is considered by Hutchison to be almost invariably caused by one of the following: (a) ordinary colic; (b) "umbilical" colic (first described by Moro); (c) enterospasm; (d) chronic obstruction; (e) appendicular pain; (f) causes in the urinary tract such as kinking of the ureter and ureteric calculus.

H. P. W.

News Items

ONTARIO

Interim Report of the Special Committee of the Council of the Academy of Medicine, Toronto, on the Glover Serum

Your committee begs leave to present an interim report as follows:

At its first meeting, October 11th, 1920, the members of the Committee were unanimously of opinion that it would be impossible to estimate the value of the treatment on the basis of the examination of 15 cases selected by Dr. Glover from among the large number to whom the serum had been administered. Such a superficial and incomplete investigation would be of no scientific value, and therefore unsatisfactory alike to the Medical profession, to Dr. Glover and to the public at large. It was therefore recommended that the scope of the committee be enlarged so as to include the examination of all available data, experimental and clinical, upon which Dr. Glover had based claims, which if substantiated, would mark an advancement in our knowledge of the causation and treatment of cancer of the greatest importance. Your committee accordingly communicated its views to Dr. Glover, who previously had promised the Academy to present to the Fellows at an early date the results both of his experimental and clinical work.

The Council of the Academy approved of the wider scope of the investigation advised by the Committee, and also of the collaboration of a number of eminent authorities in other centres, in the consideration of the data obtained by the Committee and in the preparation of the report to be based thereon.

In view of the interest manifested both by the medical profession and the public, and the hope which had been aroused that an important contribution had been made to our knowledge of the causation and treatment of cancer, your Committee was impressed with the necessity for proceeding with care and thoroughness to collect all available facts, to examine them critically but with open minds, in order to appraise as accurately as possible the value of Dr. Glover's work.

The claims which have been made by Dr. Glover may be considered under two headings:

(A) Experimental.
(B) Clinical.

(A) *Experimental claims.*

(*a*) That Dr. Glover has cultured cancerous cells and from them has isolated and cultured an intracellular organism which he has found confined to and present in every type of cancer.

(*b*) That by inoculation of these cells and organisms, cancer has been produced in a number of animals, including pigeons, rats, mice, rabbits, guinea pigs, hens, etc., and that a number of medical men including the Deputy Minister of Health of Canada, Dr. J. A. Amyot, had examined this material.

(*c*) That by the injection of cultures of these cells and organisms "into the jugular vein of a horse of the roan type between the ages of seven and nine years" a serum has been obtained which when injected into experimental animals, renders them immune to inoculation by the cancer cells and organisms before mentioned. In other words, while the animals not treated by the serum develop experimental cancer, those previously treated by it are immune.

(*d*) That the serum injected in cases of human cancer has been found capable of producing improvement or cure.

Your committee, therefore, regrets to report:

(1) That Dr. Glover refused to permit a visit to his laboratories by representatives of the committee.

(2) That he refused the request of the committee to be allowed to examine his cultures and experimental material at present available.

(3) That he has not acceded to the request of the committee to demonstrate his ability to culture cancer cells and organisms.

(4) That he has not acceded to the request of the committee to demonstrate his ability to produce cancer by inoculation, or to immunize animals against it.

Your committee therefore has no evidence to substantiate Dr. Glover's claims on the experimental aspect of the question under investigation.

(B) *Clinical claims.*

Your committee has endeavoured to collect information which would enable it to decide:

(*a*) Whether Dr. Glover has succeeded in producing cures in cases definitely established as cancer (1) regularly, (2) occasionally.

(*b*) Whether his serum produces improvement in cases definitely established as cancer, beyond that which occasionally occurs spontaneously or under palliative measures.

In order to answer these questions, your committee:

(1) Has examined twelve of the fifteen cases selected by Dr. Glover and asked for an opportunity for re-examination of them in order to follow their course.

(2) Has sought to obtain from the medical attendants of patients, confirmation of diagnosis and a statement as to the clinical condition of the patient before applying to Dr. Glover for treatment.

(3) Has obtained from St. Michael's Hospital through Drs. J. D. Loudon and J. M. McCormack a list of cases treated in that institution. Only those cases were included in this list which had received at least five injections of serum.

(4) Has sought to obtain from Dr. Glover a complete list of the cases treated by him privately with notes of their progress and ultimate results obtained.

(5) Has sought to obtain from the Fellows of the Academy, from hospitals and from practitioners at large, reports of the results of the serum treatment in cases which had come under their observation.

From the data above mentioned, as far as obtained, the Committee has found no evidence to warrant the hope that a specific cure for cancer has been discovered by Dr. Glover, or that a cure has been produced by the serum in any case definitely established as cancer.

It has evidence on the other hand that many cases of cancer, both early and advanced, have progressed steadily downwards, the course apparently uninfluenced by the use of the serum.

In answering the question whether the serum produces improvement in cases definitely established as cancer, beyond that which occasionally occurs spontaneously or under palliative measures, the Committee is confronted with a number of difficulties attendant upon the estimation of the value of any new form of treatment.

These may be summarized as follow:

(*a*) Good results at times are obtained in cases supposed to be cancer, but in which the nature of the condition has not been established on incontrovertible evidence. In such cases, the usual conclusion of the medical attendant is *a priori* that his diagnosis was wrong, rather than that a cure of cancer had been effected.

(*b*) Sufficient time must elapse to judge of ultimate results. Temporary improvement frequently occurs after the removal of mechanical obstruction by operation or by sloughing of a cancerous growth.

(*c*) Retrogression or even spontaneous disappearance may occur in cases of cancer so that it is not uncommon to get considerable temporary symptomatic improvement apart from any treatment.

(*d*) Psychic influences are of great importance: this aspect of the case has been well emphasized by Weil, a well-known authority, as follows:

"Is it indeed, very remarkable that a patient who has been consigned to death as a victim of a hopeless malady, should regain his spirits and his appetite, when he is again confronted with the hope of a cure, and of the eradication of his disease? It is a phenomenon well-known to every student of the disease that a large proportion of cases responds in just this manner to any treatment which is offered them. Osler has described a case of cancer of the stomach in which the mere visit to a consultant of sanguine temperament, though poor judgment, whose assurance of the patient that there was no possibility of cancer, resulted in a disappearance of all the symptoms and

a gain of eighteen pounds in weight. It is this psychic influence, which has occasionally deluded the honest student of cancer cure, and which has also so generously played into the hands of the dishonest."

It is scarcely necessary to point out that when an investigator claims to have made certain discoveries and these of fundamental importance, before they can be accepted by scientific men, the fullest opportunity must be afforded for investigating the data upon which such claims are based, with details of methods sufficiently definite to permit of the repetition of the experiments by independent workers, and that failure of an investigator to submit his work to the recognized canons of science must tend to its being discredited.

The data which your committee has been able to obtain have not convinced it that the results of treatment obtained by the use of Dr. Glover's serum are better than those obtained by similar methods introduced by others, and which have ultimately disappointed the hopes entertained of them.

In concluding this interim report, your committee wishes to state its readiness to examine any data not yet submitted, but which Dr. Glover may decide to place before it, and to collaborate in their findings with recognized authorities who have already expressed their willingness to do so or with others whom Dr. Glover himself may nominate.

All of which is respectfully submitted.

W. H. Harris, *Chairman*,
H. B. Anderson,
Herbert A. Bruce,
John J. MacKenzie,
Jabez H. Elliott (*ex-officio*),
Harris McPhedran, *Secretary*.

The undersigned who were added to the Committee concur in the above report:

Geoffrey Boyd
W. P. Caven,
A. Primrose.

Presented to the Council of the Academy and adopted, January 13th, 1921.

J. H. Elliott, *President*. F. C Harrison, *Honorary Secretary*.

Petition from the Ontario Medical Association to the Government of the Province of Ontario

The Hon. E. C. Drury, LL.D., Premier of the Province of Ontario, and Members of the Cabinet;

Honourable Gentlemen:

We appear before you, not as a class desiring class privileges for our own benefit, but merely as a representative group of citizens realizing that we have a duty to perform in the interests of the community as a whole.

Our organization represents the members of the profession in Ontario, and it is definitely interrelated with the activities of local Medical Societies situated in the various parts of the Province.

Our Association is anxious to serve the community to the best of our ability, and we desire to definitely assist by actively co-operating with all recognized agencies interested in the preventive measures for Public Health, and for all those things which have to do with the betterment of medical service for the various individuals in the community.

In order that the best facilities for modern treatment be brought within the reach of all parts of the Province, the hospitals now in existence, or that may be brought into existence, should be assisted in every way to enable them to have efficient equipment with which to furnish the means of correct diagnosis and treatment. To carry out this idea, the hospitals of the Province should be carefully inspected as to the standardization of their scientific equipment, and as to what further equipment would be required to bring them up to a degree of modern efficiency.

During the last two years we have found it possible to enlist the co-operation of a very large number of the most progressive members of our profession, and we believe that we now have an organization, which, if assisted by the State along the lines herewith appended, can be of greater service to the community.

The chief points which we desire to bring to your attention, are:—

1. The advisability of making a survey of the amount of unattended sickness occurring in the Province.

2. The advisability of transferring the present nursing and medical school inspection from the

Department of Education to the Department of Health.

3. The real necessity for measures which will guarantee the continuous and efficient standardization of drugs.

4. The necessity for carrying post-graduate teaching to more remote places where the practitioners cannot leave their homes to attend the great institutions of learning.

These various problems have been discussed at County Society, and District meetings throughout the Province, during the past six months, and in addition a special meeting of our Association held in Toronto in December, 1920, instructed the Executive Committee to take some definite action. Thus we account for our presence here to-day.

In presenting this petition, we do so knowing that we have the complete endorsation of a large majority of the members of the profession of this Province.

1. The necessity for a survey of the total volume of sickness and the proportion of the same which is unattended for a more or less lengthy period in this Province, is suggested by the large number of rejections of those examined in recent years for admission to the Army, the proportion of rejections of adults applying for Life Insurance and the proportion of school children which physical inspection reveals to be below par.

2. While, at the present time, municipalities of 200,000 population in this Province are permitted by the Public Health Act to carry on through the local Boards of Health, the supervision of school medical and nursing service, it is believed that such work in all municipalities should be placed under the local Boards of Health, rather than under the Board of Education. In this way all public health work from infancy to old age would be carried on under one authority, namely, the local Medical Officer of Health.

3. The Ontario Medical Association is greatly interested in obtaining pure and standardized drugs and medicines for the people of this Province, and we hope that the Provincial Board of Health will help us in our efforts to this end.

4. The subject of improving the educational opportunities of the medical profession, is one of the utmost importance to the health of the community. It is very difficult, and in many instances impossible, for practitioners to visit the teaching centres in the large cities. To overcome this difficulty, the Ontario Medical Association is endeavouring to carry into effect a plan whereby medical teachers shall visit the various districts of the Province, and address, and give demonstrations to, the medical practitioners of these localities.

The younger man and the experienced teacher who will really endeavour to educate his hearers, is not well off. For this reason he cannot afford to travel and pay his way. He is qualified to teach new things which the general practitioner should know and use. We strongly feel that for the health of the Province he is, in the most cases, the man who should go; hence his travelling expenses must be paid and he should receive a nominal fee so that his hearers may not feel that they are under any obligation to him personally. Our practitioners need this instruction greatly. We believe that our Association should have a fund by which the more isolated physicians could be aided in obtaining teachers of this class.

With this object in view, the Association through its Committee on Education, has arranged a Post-Graduate Schedule of subjects from which the local Societies may choose, and in order to partially remunerate the visitor for his loss of time, and very often loss of practice, desires to establish a fund, and it is towards this fund that we are asking the government to contribute the sum of ten thousand dollars. We feel sure that the improvement of the health of the community, which would result, would amply repay the State for this outlay.

All of which is respectfully submitted on behalf of the Ontario Medical Association.

J. H. MULLIN, *President.* T. C. ROUTLEY, *Secretary.*

Toronto, February 17th, 1921.

Both Premier Drury and the Hon. Walter Rollo, Minister of Labour and Health, evinced keen interest in the several points of the memorandum. Members of the deputation upon interrogation had ample opportunity to enlarge upon our requests. The Premier appeared to be particularly struck with the advisability of the establishment of a bureau for the standardization of drugs, and thought our plan for post-graduate education worthy of support.

The deputation was assured that our representations would receive the careful and sympathetic consideration of the Government.

Medical Legislation

To The Honourable Premier of the Province of Ontario
And Members of the Cabinet.

Mr. Drury and Gentlemen:

As the subject of medical education and what qualifications should admit to the practice of medicine in the Province of Ontario are questions of so much importance to the people of this Province, it has been felt by the Ontario Medical Association, voicing as it does the views of the members of said Association, that the Ontario Government of Ontario would not be averse to learn these views:—

In the first place the Ontario Medical Association stands for high ideals in those who practice medicine, and demands of its members that they must be qualified to practise in this Province by passing the examinations of the College of Physicians and Surgeons, or by holding such qualification as is accepted by the said college as equal to its own diploma. The Ontario Medical Association also exacts from its members their adherence to a high standard of professional ethics. Further, its members must not ally themselves with any cult nor adopt any exclusive name indicating such.

But, apart from the foregoing, the Ontario Medical Association does not pretend to dictate to anyone who obtains the license of the College of Physicians and Surgeons that he should not adopt some particular name for his method of treatment. The adoption of such special names as are not recognized by the regular medical profession, as represented by the Ontario Medical Association, only has the effect of debarring such persons from membership in the Association. This, however, has no effect on their right to practise, providing they secure the license of the College of Physicians and Surgeons of Ontario.

The Ontario Medical Association is a voluntary organization, and has among its objects the following:

1. To promote a high standard of Medical Education in the Medical Colleges of the Province, and to aid the College of Physicians and Surgeons in maintaining such a standard.

2. To develop and maintain a high code of professional conduct, with the object that the people may ever feel proud of the medical practitioners of the Province and look up to them as being both well informed and truly trustworthy citizens.

3. To use its influence to avert the disaster that would result to the people of this great Province were the standards of Medical Education lowered on any subject or on the whole below that prevailing at the present day.

4. To do what it can to foster a high type of Medical Journalism in the Province, in order that the most recent and aproved views on all medical subjects may be laid before the members of the profession with the least delay.

5. To aid in securing the assistance of specially well informed members of the medical profession in all departments to give lectures and demonstrations throughout the Province to the members of the Association belonging to its many local branches.

The Ontario Medical Association would most respectfully invite the attention to the Government and Legislature of Ontario to the definition of the Practice of Medicine as laid down by Mr. Justice Frank E. Hodgins to be found on page 66 of his able report on Medical Education in Ontario.

"The term 'Practice of Medicine' shall mean and include:

"(1) The use of any science, plan, method, system or treatment with or without the use of drugs or appliances for diagnosing, alleviating, treating, curing, prescribing or operating for any human disorder, illness, disease, ailment, pain, wound, infirmity, injury, defect or deformity or physical or mental condition, and the holding out, offering or undertaking by any means or method to do any of the foregoing and including midwifery and the administration of anæsthetics.

"(3) Any manipulation or other kind of physical or mental treatment whatsoever, suggested, prescribed or advised, for body or mind, administered to, operated upon, or intended to be followed by the patient himself or herself, intended or professing immediately or ultimately to benefit the patient, and the holding out, offering or undertaking by any means or method to use the same or to diagnose.

"Any person who shall habitually use in advertising any title such as M.D., M.B., D.C., D.O.S., or any title as indicated thereby or as surgeon, doctor, physician, healer, professor, specialist, or any other letters, sign or appellation having the same or similar import in relation to medicine as defined above, shall be considered

prima facie as practising medicine. Those possessing the degree of doctor of dental surgery, or being licentiates of dental surgery, shall not be within the above provisions."

At its Annual Meeting held in June, 1919, the Ontario Medical Association carefully considered and unanimously adopted the report of the Legislative Committee which contained the following statement regarding the foregoing definition:

"The Ontario Medical Association approves of the foregoing definition of the 'Practice of Medicine', but would respectfully beg leave to suggest that the word 'habitually' be omitted from the last paragraph, as it would leave an opening for those who travel from place to place as itinerant practitioners. They might sometimes use one title and sometimes another, as they changed their location at short periods of time. These persons do much harm and are often difficult to deal with at law."

The Ontario Medical Association would direct attention to the words of Mr. Justice Hodgins to be found on page 66 of his report on Medical Education in Ontario, and which reads as follows:

"All parties that have appeared before me have expressed a desire that the word 'Medicine' or 'Practice of Medicine' should be defined by Statute.

"The latter can and should be dealt with, but its scope evidently will depend upon how far the recommendations of this report are adopted."

If they are adopted, then the definition of the "Practice of Medicine" may be couched in the words given and subject to such modifications as will exclude from it the exercise of the tenets of any religion or any practice not properly within it, such as massage under the direction of a regularly qualified physician, or the fitting of glasses by mechanical means or aid given in any emergency.

These words of Mr. Justice Hodgins are very appropriate, and should receive the most careful consideration at the hands of the Government and Legislative Assembly of Ontario.

On the matter of the right to practice, the Ontario Medical Association prior to June, 1919, adopted the following, page 3 of "Report of the Ontario Medical Association on Judge Hodgins' report on Medical Education", a copy of which was filed with the Government:

"The chief end of all legislation is the protection of the people. In all matters pertaining to the treatment of all forms of disease, and injuries this can only be secured by exacting from all who would undertake the duties of attending and treating the sick or injured the highest possible standard of training and scientific education that modern medical scientific knowledge can furnish. Such legislation will not only protect the public, but it will, in a very large measure, protect the profession against slothful methods in its ranks and overcrowding, and the evils that tend to flow from these. No one should, therefore, be permitted to practice any form of healing who does not obtain the Ontario license."

This position had been already emphasized by Mr. Justice Hodgins in the following conclusions to be found on page 72 of his report:

"(6) That Osteopaths, Chiropractors and other drugless physicians practising in this Province on the 30th day of June, 1913, be permitted to continue for six months from the 1st day of January, 1918, without being subject to any disability or prosecution.

"(7) That after the 1st day of July, 1918, no one shall practise medicine as defined aforesaid in this Province without a license from the College of Physicians and Surgeons of Ontario, except that those who were practising what is known as Osteopathy on the 30th of June, 1913, if possessed of a diploma from one of the five colleges now recognized by the American Osteopathic Association, with five years' practice in Osteopathy, or if they obtain from that Association a certificate that they are qualified to pass the examination for license in the State where Osteopaths are examined and licensed which has the highest standard, may continue to practise under a special license to be issued by the Minister of Education in which the practice of the holder shall be limited to osteopathy and as not including the administration of drugs nor the performance of surgery with instruments."

The views set forth in these two conclusions cannot be too strongly emphasized. The first and supreme duty of the state is that of protecting the life and health of every citizen. On this aspect of the case hear what Mr. Justice Hodgins has to say as found on page 133 of his report:

"It ought to be clear that individuals making up the public are not themselves competent to form a proper conception of the value of the reverse of the services of those holding themselves as our physicians. There are few positions in

life in which a man is so completely and often so suddenly placed in the hands of someone else as is the sick man in the presence of the physician. He cannot bargain on equal terms, and his family are equally helpless, both because of their ignorance of medical science and because, under usual circumstances, they are anxious and worried. Hence it has always been one of the highest duties of the State to see that those who are called in to prescribe for human ailments are so trained that they can be safely trusted to properly ascertain the cause and prescribe for its remedy. And not only so, but the prevention of disease in the Community is such a pressing and vital need that the State is not content with providing proper training for the physician, but it compels the citizens of the State to submit not only to rules and regulations, but also to drastic measures, cures and operations for the benefit of the Community prescribed by those who have adequate training and experience in such matters, and this presupposes the State has satisfied itself that proper standards of learning have been set up and maintained for those who are thus authorized to heal and direct."

From the force of those weighty words there can be no escape. A man is taken suddenly ill with pain in his side and calls in an osteopath, who may institute some process of manipulation. The case, however, is one of pneumonia for which such treatment would be most injurious. Or, take another case. A person is seized with a severe pain in the abdomen and sends for a chiropractor, who may proceed to treat some displacement of the spinal column. The case is one of acute appendicitis. Time is lost and there is grave risk that a life may also be lost under such a method of treatment, carried out on such an erroneous diagnosis. Or, again, take a case of Diphtheria, Scarlet Fever, or Smallpox, where it is so important that a correct diagnosis in the interest of other people be made at once. Here the value of diagnosis is supreme. But to put this matter beyond all doubt, turn to page 34 of Mr. Justice Hodgins' report, and read what he says on the question of diagnosis:

"Ability to make a correct diagnosis is therefore the primary end of all good medical education. Diagnosis does not necessarily end when a decision has been reached as to the particular disease to be combatted, for it continues during the treatment to operate with regard to each successive phase of the case. It is as vital in realizing the effect of the treatment, in detecting each manifestation of what are called complications, and in recognizing progressive improvement or the reverse, calling for a continuance or a modification of the particular treatment. In this aspect it becomes part of and is partially merged in the method of healing employed."

To be able to make a correct diagnosis one must have received a thorough training in anatomy, physiology, pathology and bacteriology; and this must be followed up by long and intensive training at the bedside of the sick. On this point, note the words of Dr. L. F. Barker, Professor of Medicine in Johns Hopkins Medical Faculty, Baltimore. Here they are:

"Even the representatives of the Medical sects admit that the work of the first two years of the Medical School in the pre-clinical sciences should be the same for all Medical students. But why should there be any departure from the scientific method when the work of the clinical subjects of diagnosis and therapy are approached at the middle of the medical student's course? There is only one great science of medicine, just as there is one science of chemistry, one science of physics, and one science of biology. We hear nothing of sects in physics or of sects in chemistry. Nor should we, in my opinion, hear anything any longer of sects in medicine." (See page 35, Justice Hodgins' Report.)

These weighty opinions of Justice Hodgins and Professor Barker, opinions that could be multiplied many times over, should finally set at rest the claims of Osteopaths, Chiropractors, and all such sects to legislative recognition. On the subject of creating further divisions among those entitled to treat people, Justice Hodgins, on pages 34 and 35, remarks thus:

The progress of Medical Science and investigation is continuous, and a survey of the changes in medical opinion and methods in the last half century, having regard to the introduction of anæsthetics, antiseptics and serums, the extent of bacterioriological research and chemical analysis, and the importance of diet, exercise and cleanliness, is most striking and impressive. These necessarily enlarge the scope of medical education into regions not originally traversed by it, and render it imperative that it should be most comprehensive and exacting if it is to include these modern imperative and enlightening studies. I have not been able to find any escape from the impression, which these results force upon one's mind in weighing the advantages of the present system against what is now proposed."

On page 31 of his report Justice Hodgins recommends that the Osteopaths now engaged in practice procure from the American Osteopathic Association a certificate of their fitness to practice, and suggests how this may be done. Regarding this certificate he remarks thus:

"The license thus granted shall not permit its holder to use or administer drugs, nor to perform surgery with the use of instruments, nor to sign death certificates, nor to use the term 'Doctor' either in full or otherwise indicated, and must be limited to Osteopathic methods and practice."

Here one sees how careful he is to safeguard the people and to avoid creating medical divisions.

The Ontario Medical Association feels impelled to urge that Chiropractic should be given no consideration in law. It is founded on a complete negation of all medical science and progress. If it is anything at all, it only is a system of gross and pitiable ignorance. With regard to Osteopathy this must be set forth clearly that it is not a system of medicine at all, but merely a phase of general therapeutics or treatment which in turn is only one department of the many that make up a full course of medical studies. What there is in it that has any merit is a part of the curriculum for education of the medical profession which is continually making use of massage, rubbing, and manipulation in the treatment of ailments suitable for such treatment, as amply demonstrated in the recent war. Osteopathy should not be created into a system of treatment and set loose upon the public to be used by persons incapable of making correct diagnosis of human ills and injuries, and consequently applied by these practitioners many times, possibly to the previous detriment of those so treated, or rather mistreated, as would result, for example, from forcible manipulation of a tuberculous joint, or one that had been of such nature, but still remained stiff.

"Upon the best consideration I can give to this important subject, I can see no escape from the conclusion that treating Osteopaths as a separate class in regard to their medical training would be, especially at this juncture a very great mistake". (Quoted from Hodgins' Report.)

When one turns to Chiropractic the statement made by Justice Hodgins on page 33 of his report should settle the matter:

"I cannot bring myself to the point of accepting, as part of our legalized medical provision for the sick, a system which denies the need of diagnosis, refers 95 per cent. of disease to one and the same cause, and turns its back resolutely upon all modern medical scientific methods as being founded on nothing and unworthy even to be discussed."

The Association would direct attention to the fact that we do not in any manner interfere with the religious views of our members, nor do we permit discussions on religious topics. It is only when a religious body enters upon the continuous treatment of disease that it challenges an examination of its methods at the hands of the regular medical profession. It is for this reason that Christian Science comes under observation. A careful study of "Science and Health" with Key to the Scriptures, the text book of this denomination, and other writings of the cult, reveals a deplorable condition of ignorance about disease, injuries, matter and therapeutics. The teachings on these subjects set forth in "Science and Health" are a positive menace to the public. This became very clear to the mind of Mr. Justice Hodgins, who, on page 38 of his report, expresses himself thus:

"But their rights should be carefully restricted to the bona fide exercise of the tenets of their religion, and they should possess no other or different right or immunity from what is enjoyed by the clergyman or minister who is called in for the spiritual benefit of the member of his communion, and whose ministrations often react beneficially on physical suffering."

To make the position of the Christian Scientist perfectly clear let two quotations from the 1917 Edition of the "Science and Health" suffice:

On page 179 these words are found:

"Treatises on anatomy, physiology and health, sustained by what is termed material law, are the promoters of sickness and disease. It should not be proverbial, that so long as you read medical works you will be sick."

Then again on page 417 the following appears:

"To the Christian Science healer, sickness is a dream from which the patient needs to be awakened."

To allow Osteopaths and Chiropractors to secure the right to practice by the study of a limited part of the medical course would establish a very dangerous precedent. Others might come forward and claim a similar right by taking up electricity, or baths, or drugs only, without making themselves acquainted with other branches of medical science. Thus we might soon have Balneopathists, Electrotherapeutists, etc.

One would think that if the Osteopaths and Chiropractors were sincere in a desire to treat their patients properly they would not be unwilling to acquire such a complete knowledge of all departments of medical learning as would enable them to act judiciously in all cases. If they are not willing to accept this view, one can only conclude that they are seeking a short cut into the practice of medicine, and thereby hope to secure its rights and privileges without the expenditure of time and labour required to obtain the license, of the College of Physicians and Surgeons of Ontario.

After a long and strenuous struggle for at least seventy-five years, the medical profession in Ontario has attained its present proud position of holding one of the first places in the world. The Medical Colleges of Ontario are now recognized to be as efficient as those found anywhere, and our hospitals are a credit to the generosity and intelligence of the people. An immense amount of time, thought and money have been expended to secure these desirable conditions. It would be a disaster to the citizens of the Province were the bars to be lowered now, and the gates opened so that persons holding mediocre qualifications would be permitted to practice medicine or any branch of healing. The plea for a high standard is made by a united medical profession in behalf of the people, and not in its own behalf. Let there be one standard for all.

The Ontario Medical Association wishes only to be regarded as trying to safeguard the health of the people of this great province. This has ever been its attitude. Its contention is that all who would seek to heal the sick or treat the injured must first give evidence of being in the possession of the requisite skill to do so. This can best be secured by insisting upon all who practice medicine holding the qualification of the Ontario College of Physicians and Surgeons. It is the earnest desire of the Ontario Medical Association that the Government and Legislature of Ontario may see their way to validate this position; namely, the one portal to the practice of medicine in any of its branches.

We respectfully appeal to you, therefore, to give this matter your early consideration since the passage of time merely makes the problem increasingly difficult.

All of which is respectfully submitted on behalf of the Ontario Medical Association.

J. H. MULLIN, *President.* T. C. ROUTLEY, *Secretary.*

The Retirement of Major-General G. L. Foster as Director of Medical Services, Ottawa

MAJOR-GENERAL FOSTER, M.D., F.R.C.S., LL.D., C.B., after a long and brilliant career in the Military Medical Service, has retired to civil life. He was born in North Kingston, Nova Scotia, in 1874, and after a preliminary education in Nova Scotia, he graduated in medicine from the University of New York, in 1896, and immediately became a partner of Sir Frederick Borden in a country practice in King's County. He joined the Militia as Surgeon-Lieutenant in the King's County Regiment, in 1897, and reported for duty as Surgeon at the Royal Military College in the same year. For the next four years he was engaged with the Yukon Field Force, returning from the far North-West in 1901. From this time on, as a member of the permanent military force, he served in various places in Canada, England and Ireland, and returned in 1909 to Halifax, as A.D.M.S. of M.D. No. 6. In August, 1914, we find him at once at Valcartier with the Canadian troops for duty overseas, with whom he goes as A.D.M.S. of the Canadian Division. It was in France during the early part of the War that he merited the high promotion which he subsequently assumed in London. He took part in the battles of Neuve Chappelle, Festubert, Givenchy and the second battle of Ypres, during which last battle, the Canadian Medical Services handled the casualties continuously for fourteen days and nights. For this special service he was mentioned in despatches and was subsequently awarded the C.B. In September, 1915, he was appointed D.D.M.S. of the Canadian Corps, and in the following year he was again mentioned in despatches for his work in the Ypres salient and on the Somme. With such a career behind him, it was only natural that when the vacancy occurred, he was promoted to Major-General and appointed D.G.M.S. of the Overseas Forces of Canada with Headquarters in London (February, 1917). Few medical officers have received more honours than has General Foster, for in addition to those mentioned above, he was made an Officer of the Legion of Honour, Knight of Grace of St. John of Jerusalem, F.R.C.S., Edinburgh, and LL.D., McGill.

General Foster carries with him the good wishes of his colleagues in the Canadian Corps, and we hope that in his return to civil life his services to Canada may not be wholly lost.

The Coming Annual Meeting at Niagara Falls, May 31st, June 1st, 2nd and 3rd.

No physician in Ontario should miss this forty-first annual meeting, which promises to be one of the best ever held in the province. Not only will it give an opportunity to hear the leading men throughout America on special subjects, as well as bring physicians together by class and college re-unions, but it will be the best of reasons for a much-needed holiday for the hard working man and his wife.

Canada offers no better place than Niagara Falls for scenic attractions. Beautiful drives, "The Falls," the Gorge Route, the Rapids, the Whirlpool, the immense construction works of the Hydro Electric, the various Power Plants, Queenston Heights and Brock's Monument, the Lewiston Golf Club, are but a few of the many attractions. A golf match is being arranged for an afternoon at the Lewiston Golf Club. Members wishing to play must bring their own golf clubs. An idea of the programme to be placed before the profession is as follows:

General Sessions

These will be held at 11.30 Wednesday, Thursday and Friday mornings, thus leaving free both morning and afternoon for meetings of sections.

The address in Medicine will be given by Frank Billings, of Chicago.

The address in Surgery by E. Starr Judd, of Rochester.

There will be a general address on Hospital Problems by Malcolm T. MacEachren, Vancouver, and an address on Federal Department of Health by Dr. Amyot, of Ottawa.

The Committee is arranging for eminent speakers who will give after-dinner addresses on Wednesday and Thursday evenings.

Section in Medicine

"The essentials of our present day knowledge of the Diagnosis of Pulmonary Tuberculosis."

Address on Tuberculosis. Dr. J. C. Pritchard, Battle Creek, Mich.

Symposium on Diabetes. This subject will be presented by Drs. Jno. Williams, of Rochester; Prof. McLeod, Toronto University; Walter Campbell, of Toronto; and W. T. Connell, of Queen's.

Symposium on Pneumonia. Arthur A. Small, Chicago; Campbell Howard, Iowa; Prof. Miller, of Queen's; and Prof. Duncan Graham, Toronto.

Food Stuffs. Prof. Crane, of London.

General Survey of Nephritis. Leonard G. Roundtree, of the Mayo Clinic.

Section in Surgery

E. Starr Judd promises a most interesting paper on "The Surgery of the Gall Bladder".

Dr. Buntz, of Cleveland, on "Tumours of the Breast".

Dr. Rehfus, of Jefferson Medical College, Philadelphia, a paper on "Gastric and Duodenal Ulcer".

Section in Obstetrics and Gynæcology

This section promises to be very interesting. Among those who have promised papers are Dr. Cullen, of Detroit, and Dr. Potter, of Buffalo.

Child Welfare will be dealt with Wednesday afternoon.

The Conjoint Session with Surgery will deal with Cancer of the Uterus.

Eye, Ear, Nose and Throat Section

Interesting papers are promised for this section.

X-ray Section

The programme that is being arranged promises to be exceedingly interesting. Among the papers promised is one on "Superficial Therapy", by Dr. Jno. Reemer, of New York. "Deep Therapy and its Modern Development", by Dr. Pariseau, of Montreal, and Dr. Richards, Toronto.

Papers on the "Diagnostic Side" will also be presented.

On Friday an open meeting will be held, at which any member may present plates or films.

Many Canadians have promised papers.

Most of the men giving us papers "from across the line" are graduates of Canadian Universities.

Re Discussion. If preferred, questions in writing may be sent to the Chairmen of Sections instead of being presented verbally.

The complete programme will appear in the May Journal. Informal Dress on all occasions.

Hotel Accommodation. The Clifton Hotel, which is being entirely reserved for the meetings of the Association, can take care of 400 guests.

Reservations should be made early.

Additional accommodation can be provided for 900 more on the Canadian and American sides.

Entertainment is being arranged for the Ladies in the way of Drives, Concerts, Garden Parties, etc.

The Executive Committee of the Ontario Medical Association asks and expects the co-operation of every practitioner in Ontario. Never was there a time in the history of the profession when the necessity of unity and co-operation was so vital as at the present moment.

Your suggestions, opinions, questions, in fact anything which you may wish to direct to the Committees in charge will be cheerfully dealt with by the following officers:

Committee on Programme:

Dr. J. Heurner Mullin, Chairman, Hamilton.

Dr. T. C. Routley, Secretary, 127 Oakwood Avenue, Toronto.

Dr. James L. Mahoney, Local Secretary, 265 Victoria Avenue, Niagara Falls.

Committee on Entertainment:

Dr. E. T. Kellam, Chairman, 73 Queen Street, Niagara Falls.

Committee on Arrangements:

Dr. F. W. E. Wilson, Chairman, 25 St. Clair Avenue, Niagara Falls.

Committee on Publicity:

Dr. S. N. Davis, Chairman, 58 St. Helens Avenue, Welland.

Section of Medicine:

Dr. J. R. Mencke, Chairman, Bridgeburg.

Dr. W. J. Weaver, Secretary, 89 Main Street, Niagara Falls.

Section of Surgery:

Dr. W. J. Macdonald, Chairman, 14 King Street, St. Catharines.

Dr. J. G. Harkness, Secretary, 13 King Street, St. Catharines.

Section of Obstetrics and Gynæcology:

Dr. H. D. Cowper, Chairman, 173 Main Street West, Welland.

Dr. J. R. Boyd, Secretary, 169 Main Street East, Welland.

Section of Eye, Ear, Nose and Throat:

Dr. J. G. Sutherland, Chairman, 35 Church Street, St. Catharines.

Dr. F. C. Macdonald, Secretary, 37 Church Street, St. Catharines.

Section of Radiology:

Dr. L. R. Hess, Chairman, Main Street, Hamilton.

Dr. H. M. Tovell, Secretary, 206 Bloor Street West, Toronto

NOVA SCOTIA

Dr. Arabella MacKenzie has recently been appointed to the staff of the Massachusetts-Halifax Health Commission to direct the work of the pre-school age dental clinic at the Admiralty House Health Centre. This is said to be the first dental clinic in the world that will limit its work to the pre-school age period. The dental clinic will co-ordinate the dental work with the various medical clinics, Child Hygiene, Nutrition and Posture. Nutrition of the teeth as well as dental prophylaxis will be featured as essential to oral health.

Dr. F. W. Tidmarsh, after having taken a special course in conducting Nutrition Clinics in Boston, has been appointed to the same staff for the purpose of organizing Nutrition Clinics in the Commission's Health Centres in Halifax and Dartmouth. Nutrition Clinics will be organized for undernourished pre-school age children and school age groups.

Dr. W. Alan Curry has accepted an appointment to organize Posture Clinics for the Massachusetts-Halifax Health Commission. To this service children will be admitted, after such handicaps as adenoids and tonsils have been removed, and the teeth having been placed in the best of condition it is possible to put them in.

These three services will be watched with the greatest of interest by the medical and nursing profession and by all public health workers.

Medical Societies

Re-Organization of the British Columbia Medical Association

At a meeting held January 15th last, the re-organization of the British Columbia Medical Association was successfully effected.

In response to the call sent out for this meeting by Dr. H. W. Riggs, Vancouver, Secretary *pro tem*, over one hundred medical men from outside of Vancouver signified their desire to become members of the Association.

Certain Standing Committees were appointed and, in this connection, particular emphasis was laid on the importance of the work of the Committee on Publicity and Education. It was pointed out that the work of this Committee was along new lines and that upon it would devolve a considerable portion of the future work of the Association.

In order to bring the entire profession into the Association as soon as possible, district organizers were appointed to cover the Province. Already there has been a very satisfactory response from all sections.

The matter of affiliation with the Canadian Medical Association was taken up and a resolution favourable to this was passed.

The following is a list of the Officers and Committees for the ensuing year:

Officers: President, Dr. A. S. Monro, Vancouver; Vice-President, Dr. W. J. Knox, Kelowna; Secretary-Treasurer, Dr. W. A. Clarke, Vancouver.

Executive Members: Dr. Rothwell, New Westminster; Dr. Hudson, Victoria; Dr. Seldon, Vancouver.

Standing Committees: Legislative: Dr. P. A. McLennan, Vancouver; Dr. W. T. Barrett, Victoria; Dr. M. J. Keyes, Victoria; Dr. Frederick Brodie, Vancouver; Dr. J. G. McKay, New Westminster.

Workmen's Compensation Act: Dr. R. E. Walker, New Westminster; Dr. J. H. McDermott, Vancouver; Dr. Geo. Hall, Victoria; Dr. W. F. Drysdale, Nanaimo; Dr. C. Eggert, Prince Rupert.

Educational and Publicity: Dr. W. B. Burnett, Vancouver; Dr. F. J. Buller, Vancouver; Dr. O. S. Large, Vancouver; Dr. W. E. Scott-Moncrieff, Victoria; Dr. E. H. McEwan, New Westminster.

District Organizers: Vancouver, Dr. F. P. Patterson; Victoria, Dr. Raynor; Island N., Dr. Geo. McNaughton; Prince Rupert, Dr. W. T. Kergin; Revelstoke, Dr. Sutherland; Kamloops, Dr. J. S. Burris; Okanagan, Dr. W. J. Knox; Kootenay, Dr. Williams (Rossland); Crow's Nest Pass, Dr. Green; Fraser Valley, Dr. J. F. McKay; G.T.P. District, Dr. Wrinch.

The work the Association has mapped out for itself may be briefly outlined as indicated in the following excerpts from the new Constitution:

Article 2. Objects: The object for which this Association is established is the promotion of medical and the allied sciences, and the maintenance of the honour and the interests of the medical profession.

Article 7. Committees: The Standing Committees shall be: (*a*) Legislative Committee, whose duty it shall be to watch all Bills affecting the profession coming before the Legislative Assembly and municipal councils, and to take such steps as are necessary to promote legislation favourable to and to combat legislation adverse to the interests of the profession and the public. (*b*) A Workmen's Compensation Act Committee, whose duty it shall be to deal with all matters affecting the profession ensuing out of the Workmen's Compensation Act. (*c*) Publicity and Educational Act Committee, who shall arrange to conduct a systematic and continuous campaign through the lay press to educate the public with regard to questions of health, sanitation, recognition of early signs of diseased conditions, the progress of medical science, the lack of scientific training of members of various cults which pretend to heal by irregular means, and any other subjects which from time to time they may deem in the interests of the public and the medical profession, should be given authority. For this purpose, they shall have authority to select a staff of control both lay and medical to prepare articles along the lines indicated. They should appoint a Board of Censors (medical) who shall review all such articles before they are submitted to the press,

so as to eliminate any statements which may not be orthodox or be recognized as sound in the light of present-day medical knowledge.

Much credit is due to Dr. H. W. Riggs, Vancouver, for the work he did in getting the meeting called and the organization again successfully launched on what it is confidently hoped will be a career of usefulness to both the public and profession.

Canadian Society of Anæsthetists Meeting at Niagara Falls, June 1st to 3rd, 1921

THE Canadian Society of Anæsthetists has been accorded the distinction and honour of a Joint Meeting with the Ontario Medical Association and the Interstate Association of Anæsthetists. This, the First Annual Meeting, will be held in Niagara Falls, June 1st to 3rd, at the Clifton House. The New York Society of Anæsthetists is also invited to participate.

An interesting and instructive programme is under preparation. There will be a Joint Session of all the Organizations on the afternoon of Friday, June 3rd, during which papers on anæsthesia, of pertinent interest to those in attendance, will be presented. One feature of the meeting will be a Case Report Session.

All anæsthetists, surgeons, specialists, dentists and research-workers, interested in the advancement of the science and practice of anæsthesia, are cordially invited to attend the Niagara Falls meeting and find out how their needs for progress are being met.

Information has just been received that the Anæsthetic Section of the Royal Society of Medicine are sending Dr. H. E. G. Boyle, O.B.E., Anæsthetist and Lecturer on Anæsthetics to St. Bartholomew's Hospital, as their representative.

The following Nominations have already been made for 1921–1922:

President, William Webster, M.D., Winnipeg, Man.; vice-president, David H. Arnott, M.D., London, Ont.; Secretary-Treasurer, Wesley Bourne, M.D., Montreal; Executive Committee: Thomas R. Hanley, B.A., M.D., Toronto, Ont.; Charles LaRocque, B.A., M.D., Montreal; F. H. McMechan, M.A., M.D., Avon Lake, Ohio; Walter L. Muir, M.D., Halifax, N.S.; Members are requested to submit further nominations, and their attention is hereby called to By-Law No. 6.

Those interested are invited to communicate with the Secretary, Dr. Wesley Bourne, 34 St. Mark Street, Montreal.

Book Reviews

DISEASES OF THE SKIN. A Text Book for Students and Practitioners. By J. M. H. MACLEOD, M.A., M.D., F.R.C.P. With 23 coloured and 435 other illustrations. Pages xx and 1307. Publishers: H. K. Lewis & Co., London. Price, £3 10.

No work on dermatology published in recent years has been better received than this one. Dr. MacLeod has surpassed the most sanguine expectations of his medical friends.

The classification of the diseases is based on the cause, which is the most rational and readily understood one.

Combined with the symptomatology and treatment of each disease is a thorough description of the pathology.

The volume is illustrated by numerous photographs and micro-photographs. This book can be recommended not only to students but to all practitioners. D. K. S.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE. By JAMES M. ANDERS, M.D., Ph.D., LL.D., Professor of Medicine Graduate School of Medicine, University of Pennsylvania, Fourteenth Edition, thoroughly revised with the assistance of John H. Musser, Jr., M.D., Associate in Medicine, University of Pennsylvania. Octavo of 1284 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company, 1920. Cloth, $11.00, net.

That this text-book should require a fourteenth edition with numerous reprintings in the space of

twenty-three years since the first edition appeared, is ample demonstration of its popularity as a text-book of medicine for the student and general practitioner.

The present edition is a revision of that of 1917, when the book was entirely reset. The influence of the development of medical knowledge during the war is well illustrated in the revision of the descriptions of typhus fever, yellow fever, pneumonia, cerebrospinal meningitis, scurvy, focal infection, measles and others. The newer work on hay fever and asthma is included. The article on influenza has been entirely re-written, while a number of new headings appear, trench nephritis, disordered action of the heart, epidemic encephalitis and a number of others.

The authors may be assured of a continued popularity for their text-book while they continue to keep it up with the march of medical progress.

J. H. E.

SYPHILIS. By LLOYD THOMPSON, PH.B., M.D., physician to the syphilis clinic Government Free Bath House. Second edition, thoroughly revised, 486 pages. Price, $7.00. Publishers: Lea & Febiger, Philadelphia and New York, 1920.

This book is an excellent resumé of the entire subject of Syphilis. It is concise, scientific, well illustrated and is particularly excellent in its typographical character.

The book is in harmony with the newer findings in the microbiology and pathology of the disease. The author discredits Ricord's long standing differentiation of the disease into stages, and points out that such classification is no longer justified, in view of our greater knowledge of the pathology of the disease.

The author departs from the common practice of making spirochæta feminine, and while he is not entirely consistent, for the most part describes the organism as spirochæta pallidum. According to the common usage, spirochæta pallida is the better form. If any change is to be made, the organism should be called treponema pallidum, which is more in accordance with recent biological classification.

The book is particularly valuable for its chapters on laboratory methods of diagnosis, including the complement-fixation and colloidal gold tests. It is replete with authoritative references to both the classical and the latest literature, which are given with extreme exactitude.

The book is to be highly recommended as a text book on the diagnosis and treatment of this important malady.

F. S. P.

WANTED—Eye, Ear, Nose and Throat Specialist desires location in small Canadian city. Address, Canadian Medical Association Journal.

WANTED—Applications for position of Paediatrician to the Montreal General Hospital will be received by the Secretary of the Medical Board, Dr. E. M. Eberts, address, Montreal General Hospital. Applications may be sent in up to May 1st, 1921.

WANTED—at once, an unmarried physician on the medical staff of the Nova Scotia Sanatorium, Kentville, N.S. Apply for full particulars to

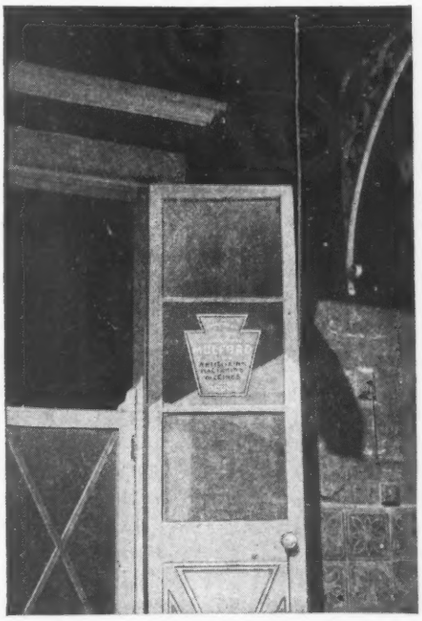
MEDICAL SUPERINTENDENT.

Reading Notice

IN CHINA, TOO—

Distance is no barrier to the appreciation of quality, as will be noted from the accompanying illustration, which shows a sign that is well known all over America, on the office door of a physician in far-off China

In this country, the familiar Mulford Keystone has been synonymous with quality for a number of years, and a great many physicians and pharmacists in foreign lands



have been quick to appreciate the value and prestige which accompany the display of this sign.

In any clime, regardless of the language or manners and customs of the people, superior quality soon asserts itself and rises to its proper level at the top of the competitive heap.

In the last analysis, quality should always be given first consideration, rather than price, and the H. K. Mulford Company deserve to be congratulated upon their long, persistent and successful stand upon this basis.

Medical Societies

CANADIAN MEDICAL ASSOCIATION:—President—Murdoch Chisholm, Halifax. Secretary-Treasurer—J. W. Scane, 836 University St., Montreal. Associate Secretary—T. C. Routley, 127 Oakwood Ave., Toronto. Chairman Editorial Board—A. D. Blackader, Montreal.

ACADEMY OF MEDICINE, TORONTO:—President—J. H. Elliott, Secretary—F. C. Harrison. Treasurer—J. H. McConnell.

ALBERTA MEDICAL ASSOCIATION:—President—W. S. Galbraith, Lethbridge. Secretary—J. E. Palmer, Calgary. Treasurer—F. S. Macpherson, Edmonton.
Meeting 1921—Calgary.

ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA:—President—Lieut.-Col. A. T. Shillington, Ottawa. President-Elect—Lieut.-Col. R. T. Macdonald, Sutton, Que. Secretary—Lieut.-Col. T. H. Legget, Ottawa.

ASSOCIATION OF MEDICAL OFFICERS OF NOVA SCOTIA:—President—P. N. Balcom, Aylesford. Secretary—W. H. Hattie, Halifax.

BRANT COUNTY MEDICAL SOCIETY:—President—R. Palmer, Secretary—G. M. Watt, Brantford, Ont.

BRITISH COLUMBIA MEDICAL ASSOCIATION:—President—A. S. Monro. Secretary-Treasurer—W. A. Clarke, 302 Birk's Building, Vancouver.

CALGARY MEDICAL ASSOCIATION:—President—H. W. McGill. Secretary—T. H. Crawford. Treasurer—T. J. Costello.

CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS:—President—F. L. Schaffner, Winnipeg. Secretary—G. D. Porter, Toronto. Honorary-Treasurer—Sir George Burn, Ottawa.

CANADIAN HOSPITAL ASSOCIATION:—President—E. H. Young, London. Secretary—W. J. Dobbie, Weston, Ont.

CANADIAN PUBLIC HEALTH ASSOCIATION:—President—J. A. Amyot, Ottawa. Secretary—R. D. Defries, Toronto. Treasurer—F. Adams, Windsor, Ont.

COLCHESTER-HANTS MEDICAL SOCIETY:—President—J. W. T. Patton. Secretary—H. V. Kent, Truro, N.S.

EDMONTON ACADEMY OF MEDICINE:—President—T. H. Prust. Secretary—H. H. Hepburn. Treasurer—R. F. Nicholls.

ELGIN COUNTY MEDICAL ASSOCIATION:—President—F. W. Smith. Secretary-Treasurer—W. F. Cornett, St. Thomas, Ont.

GUELPH MEDICAL ASSOCIATION:—President—A. T. Hobbs, Secretary—J. Lindsay.

HALIFAX MEDICAL SOCIETY:—President—J. S. MacDougall. Secretary-Treasurer—S. J. Turel.

HAMILTON MEDICAL SOCIETY:—President—F. B. Mowbray. Corresponding-Secretary—W. R. Jaffrey. Treasurer—D. A. Warren.

HURON MEDICAL ASSOCIATION:—President—J. W. Shaw, Clinton. Secretary—A. T. Emmerson, Goderich, Ont.

KINGSTON AND FRONENAC MEDICAL SOCIETY:—President—Bruce Hopkins. Secretary—W. T. Connell. Treasurer—H. E. Day, Kingston, Ont.

L'ASSOCIATION DES MÉDICINS DE LANGUE FRANCAISE DE L'AMERIQUE DU NORD:—President—E. Dubé, Montreal. Secretary—J. A. St. Pierre, Montreal.
Next Meeting, Montreal, 1922.

LAMBTON COUNTY MEDICAL ASSOCIATION:—President—J. Bell. Secretary—J. F. Sadlier, Sarnia, Ont.

LEEDS AND GRENVILLE MEDICAL SOCIETY:—President—H. M. Featherstone. G. C. Kidd, Prescott, Ont.

LUNENBURG-QUEEN'S MEDICAL SOCIETY:—President—C. A. Hamilton, Mahone. Secretary-Treasurer—L. T. W. Penney, New Germany, N.S.

MANITOBA HOSPITAL ASSOCIATION—President—George F. Stephens. Treasurer—T. Glen Hamilton, Winnipeg. Secretary—Miss M. Martin, R.N., Municipal Hospitals, Winnipeg.

MANITOBA MEDICAL ASSOCIATION:—President—R. D. Fletcher. Secretary—T. Glen Hamilton, Winnipeg. Treasurer—S. J. S. Peirce, Brandon.

MEDICAL SOCIETY OF NOVA SCOTIA:—President—H. K. MacDonald, Halifax. Secretary-Treasurer—J. G. D. Campbell, 407 Brunswick St., Halifax.

MEDICINE HAT MEDICAL SOCIETY:—President—W. H. Macdonald. Secretary-Treasurer—J. S. Macleod.

MIDDLESEX COUNTY MEDICAL ASSOCIATION:—President—A. S. Thompson, Strathroy. Secretary-Treasurer—W. H. Woods, Mount Bridges, Ont.

MONTREAL MEDICO-CHIRURGIGAL SOCIETY:—President—W. W. Chipman. Secretary—S. H. McKee. Treasurer—D. G. Campbell.

MOOSE JAW MEDICAL SOCIETY:—President—J. M. Hourigan. Secretary-Treasurer—D. T. Underhill.

NEW BRUNSWICK MEDICAL SOCIETY:—President—Dr. W. F. Roberts, St. John. Secretary—Dr. C. J. Venoit, Bathurst. Treasurer—Dr. J. D. Lawson, St. Stephen.

NIAGARA DISTRICT MEDICAL ASSOCIATION:—President—W. J. MacDonald, St. Catharines. Secretary—S. MacCallum, Niagara Falls.

Medical Societies—*Continued*

NORTH-WESTERN MANITOBA MEDICAL ASSOCIATION:—President—Dr. F. A. Smith, Birtle. Secretary-Treasurer—Dr. Tisdale, Kenton.

NORTH WATERLOO MEDICAL ASSOCIATION:—President—Dr. F. H. Kalbfleisch. Secretary—Dr. J. E. Hett, Kitchener. Treasurer—Dr. T. H. Callahan.

NORTHUMBERLAND AND DURHAM COUNTY MEDICAL SOCIETY:—President—G. M. Ferris, Cobourg. Secretary—G. A. Dickenson, Port Hope.

ONTARIO HEALTH OFFICERS' ASSOCIATION:—President—D. A. McClenahan, Hamilton. Secretary—J. W. S. McCullough, Toronto. Meeting 1921 Toronto, May 16th and 17th.

ONTARIO MEDICAL ASSOCIATION:—President—J. H. Mullin, Hamilton. Honorary-Treasurer—G. S Cameron, Peterborough. Honorary-Secretary—T. C. Routley, 127 Oakwood Ave., Toronto.

OTTAWA MEDICO-CHIRURGICAL SOCIETY:—President—Dr. A. T. Shillington. Secretary—Dr. J. A. Dobbie. Treasurer—Dr. R. E. Valin.

OXFORD COUNTY MEDICAL ASSOCIATION:—President—Weston Krupp. Secretary-Treasurer—G. M. Brodie, Woodstock, Ont.

PERTH COUNTY MEDICAL ASSOCIATION:—President—G. R. Deacon. Secretary-Treasurer—F. J. R. Forster, Stratford, Ont.

PETERBOROUGH MEDICAL SOCIETY:—President—N. D. Buchanan. Secretary—H. M. Yelland. Treasurer—J. M. McCulloch.

PICTOU COUNTY MEDICAL ASSOCIATION:—President—Evan Kenedy. Secretary-Treasurer—J. Bell New Glasgow, N.S.

PRINCE EDWARD ISLAND MEDICAL SOCIETY:—President—Dr. G. F. Dewar, Charlottetown. Secretary—Dr. Yeo, Charlottetown. Treasurer—Dr. W. J. MacMillan, Charlottetown.

PUBLIC HEALTH SERVICES OF THE PROVINCE OF QUEBEC:—President—U. Archambault, Hull. Secretary—J. de Varennes, Quebec.

REGINA MEDICAL SOCIETY:—President—Dr. Gorrell. Secretary—Dr. Dakin.

ST. JOHN MEDICAL SOCIETY:—President—A. E. Macaulay. Treasurer—G. A. B. Addy. Recording Secretary—H. Farris. Financial Secretary—E. S. Bridges.

ST. THOMAS MEDICAL ASSOCIATION:—President—J. A. Campbell. Secretary—R. W. Gliddon. Treasurer—C. R. MacKenzie.

SASKATCHEWAN MEDICAL ASSOCIATION:—President—Dr. R. L. King, Prince Albert. Secretary—Dr. Young, Saskatoon.

Annual Meeting 1921—Prince Albert

SASKATOON MEDICAL ASSOCIATION:—President—A. F. Malloy. Secretary—D. McKenzie.

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SOCIÉTÉ MÉDICALE DE MONTRÉAL:—President—Pierre Z. Rhéaume. Secretary—P. P. Gauthier. Treasurer—L. Blagdon.

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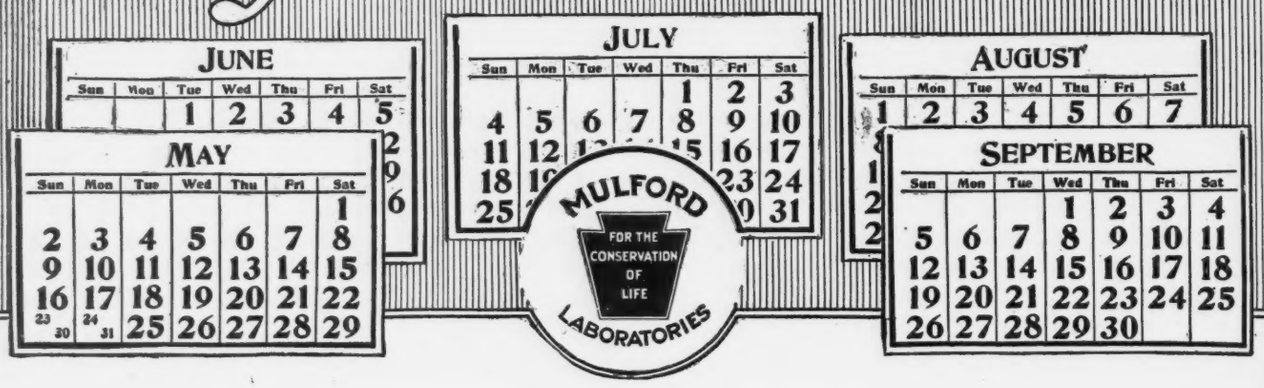
Hay Fever Time



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